THE POPULATION PROBLEM IN INDIA— A REVIEW OF INDIAN CENSUS RETURNS AND REPORTS

THE POPULATION PROBLEM IN INDIA

A CENSUS STUDY

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CONTENTS

Introduction

THE most distressing experience for a writer is when he approaches his readers with a problem. Visits for subscriptions to charities are not half so irritating as the intrusions on the peace of mind of an occupied and self-satisfied public by faddists who put up their umbrellas and insist that it is raining when every good man of the world knows that the sun is shining. But if people have wisdom festering in their brains it may be a relief to them to let it out and perhaps it may do their heart good to find a response in some stray soul that has the temerity to think in an unconventional manner like themselves. Social and economic diseases have their roots deeper than demography can pretend to reach; but it is something of a service done to unfold a problem and indicate to the best of one's ability how it can be met. A statistical study stands discredited in the eyes of the public; for, as it is said, there is nothing more misleading than facts, except figures. This is the case in European countries where statistics are claiming a rank with the positive sciences. In this country where the collection of figures is in the most rudimentary stage and divergent opinions professed to be based on the same set of figures, but handled in a different manner, are freely expressed, statistical conclusions are looked at with a good deal of shyness. From this attitude of mistrust and suspicion, population statistics, wage statistics and cultivation statistics are by no means free. I do not therefore propose to invite the reader into a snare, and to convince him against himself if he thinks the whole thing must be a farce. But if he is willing to give me a patient hearing, to correct me where I have erred—and I am painfully conscious of various shortcomings—and to supplement my sources of information by his own, I shall be glad to render my grateful acknowledgments to him.

This lengthy Introduction should have ended here but I wish to add that this Essay should not be construed into an attack on the spiritual civilisation of the country or even indirectly into a glorification of the materialism of the West. On such profound questions I could not for a moment presume to take the field. The object in view is that we should take a somewhat more matter-of-fact view of the main problem of life, *viz.*, how to live in this world. We are a poor people ; the fact is indisputable. Our poverty is, perhaps, due to a great many causes. But I put it to every one of us whether he has not at some of the most momentous periods of his life been handicapped by having to support a large family and whether this encumbrance has not seriously affected the chances of advancement warranted by early promise and exceptiona endowment. This question should be viewed by itself. It is a physical fact and has nothing to do with political environment or religious obligation. If we have suffered from the consequences of that mistake is it not a duty that we owe to ourselves and to our progeny that its evil effects shall be mitigated as far as possible and its perpetuation rendered impossible ? There is no greater curse to an individual than poverty—I say this with due respect to our spiritualism. It is hard for an empty sack to stand upright, but it is quite a luxury to be honest on £2,000 a year in spite of the heroine of Vanity Fair. An Hon'ble Member of the Imperial Legislative Council once appealed in that Chamber in a Budget debate on behalf of the " Sufedposh " poor clerk who was once " passing rich on £40 a year," but was so no longer as a consequence of the increased cost of living. A hard headed debater, with the taxpayer in the back-ground of his imagination, met this appeal with the reply that the clerk had himself alone to thank for his poverty and that he should put a restraint on his procreative powers if he wanted to save the situation. It is not in a spirit of reproach that restraint in married life is urged in these pages. It is solely from a vivid realisation of the hardship caused by large families and a

profound sympathy with the difficulties under which large numbers of respectable persons struggle through life in this country that I have made bold to speak in plain terms what comes home to every young man but which he does not care to give utterance to in a manner that would prevent the recurrence of the evil. To them, in all humility, the following pages are dedicated.

THE AUTHOR.

The Population-Problem in India.

A Census Study.

I.

THE LAW OF POPULATION.

POPULATION, according to Malthus, has an inherent tendency to multiply beyond the means of subsistence prepared for it by Nature; for while the means of subsistence tend to increase in an arithmetical progression population, if unchecked, would multiply in a geometrical progression; so that, supposing both to start on a level of equality, the ratio tends to recede farther and farther from that level. As, however, population must be limited to the means of subsistence this general tendency to increase is held in check in two ways, by the preventive and the positive checks. The preventive check is voluntary and consists in the restraint from marriage when there is no reasonable chance of maintaining the habitual standard of comfort in life. The positive checks include diseases, wars, epidemics, famines, extreme poverty, unwholesome occupation, etc., in short everything which in any way contributes to shorten the natural duration of life. Such being the nature of the checks to the increase of population it is evident that the preventive and positive checks must vary inversely as each other: that is to say, in countries where the preventive check prevails very little there will be a high death-rate; while in countries where the preventive check prevails the death-rate will be low. It follows, therefore, that in countries with a high birth-rate there will be a rapid succession of short-lived beings to keep up the numbers, one generation being pushed out of existence before its time to make room for the next—a phenomenon painfully common all over India, as we shall see during the course of this

study. The only remedy, therefore, for poverty and other evil effects of the principle of population is moral restraint or abstinence from improvident marriages.

II.

MARRIAGE.

There are two factors governing the growth of population in any country, *viz.*, natural increase and migration. In the term natural increase comes the excess of births over deaths, while the term migration comprises the difference of immigration over emigration. In all old countries where population has already adapted itself to the means of subsistence provided for it by Nature there is a slight gain by natural increase while there is a steady loss by the excess of emigration over immigration. India is such a country, and both these factors will require consideration for a proper appreciation of its population-problem.

Marriage-rate and birth-rate.

Before considering the birth and death-rates it is obviously necessary to take account of the state of feeling in the country with regard to the institution of marriage. For births and deaths, presupposing as they do the enjoyment of married life, must primarily depend on the increase or decrease in the number of marriages which must itself be determined by the popularity or unpopularity of the institution of marriage. In the countries of Western Europe the relation between the marriage-rate and the birth-rate is not very marked as the birth-rate is declining in spite of the large number of marriages contracted. This is the result of deliberate regulation of families by artificial means. Prudential considerations determine the size of a family; among the middle classes the rearing and training of

children makes such heavy demands on the high standard of comfort to which they are accustomed that it is very seldom that a man enters into the married state when there is no reasonable prospect of maintaining a family in the manner customary in his social group; and where with that reasonable prospect he does enter into the married state, his volition keeps the demands of family life from outstripping the available resources.

State of feeling regarding marriage; figures for the general population.

But the state of things in this country is otherwise. For Hindus marriage is a sacrament which must be performed regardless of the fitness of the parties to bear the responsibilities of a mated existence. A Hindu male must marry and beget children—sons, if you please—to perform his funeral rites lest his spirit wander uneasily in the waste places of the earth. The very name of son, 'Putra', means one who saves his father's soul from the hell called Puta. A Hindu maiden unmarried at puberty is a source of social obloquy to her family and of damnation to her ancestors. Among the Mohomedans, who are not handicapped by such penalties, the married state is equally common, partly owing to Hindu example and partly to the general conditions of life in primitive society where a wife is almost a necessity both as a domestic drudge and as a helpmate in field work. Excepting Burma where caste restrictions are unknown and the general conditions of life resemble those prevailing in European countries the married state is universal everywhere else. Of the total population of 315 millions in India, 49 per cent. of the males and 34 per cent. of the females are unmarried; 46 per cent. of the males and 48 per cent. of the females are married; while the rest represents the percentages for the widowed population. These figures may be taken as typical, for the divergencies in the individual Provinces and States are not very marked. In order, however, to use these figures for demographic purposes statistics of age and religion must be referred to. Of the 49 per cent. of the total male population that is unmarried three-fourths is under

the age of 15, while an equal proportion of the total female unmarried population is under the age of 10. At the reproductive age-period, *viz.*, 15-40, the proportion drops down to 6 per cent. for the unmarried female population.

Figures for the Hindu population.

The proportions by religion are very much similar to those for the general population, but Hindus are worse off than Mohomedans and Buddhists. As the Hindus comprise more than two-thirds of the population it is not surprising that their proportions should influence those for the general population. Of the population of all ages, 47 per cent. of the males and 31 per cent. of the females amongst the Hindus (against 49 and 34 per cent. respectively in the general population) are unmarried, while an equal proportion of the males and 50 per cent. of the females (against 46 per cent. and 48 per cent. respectively in the general population) are married. Of the female unmarried population, 80 per cent. is under the age of 10; at the age of 15 the proportion drops down to 13 per cent. and at the age-period 15-40 the figure is only 4; while the corresponding figures for the general population are 76 per cent., 15 per cent. and 6 per cent. respectively. It would be tedious to examine the figures by Provinces; suffice it to say that while the percentages are generally correct they fail to give an idea of the extreme prevalence of marriage in certain localities, *e.g.*, Bihar and Orissa, Central Provinces and Berar, Baroda and Hyderabad. In Bihar and Orissa, for instance, between the ages of 5 and 10, 13 per cent. of the boys and 22 per cent. of the girls are married; while in the district of Darbhanga, which occupies the place of honour, 48 per cent. of the boys and 62 per cent. of the girls are married at these ages.

Figures for the Mohomedan population.

Among Mohomedans, who come next after Hindus in numerical importance, the state of things is much better. The proportion of the unmarried is larger and that of the married and widowed smaller. Of every 100 males 53 are

unmarried, 43 married and 4 widowed, while among females 38 per cent. are unmarried, 47 per cent. married and 15 per cent. widowed. Under the age of 5 there are in the Hindu female population 18 girls per mille who are married, while the corresponding figure for Mohomedan girls is only 5; between the ages of 5 and 10 while the Hindu figure is 132 per 1,000, the Mohomedan figure is 65 or just half as much. At the reproductive age period 15-40, owing to the greater mortality consequent on child marriage and the depletion of numbers through the prohibition of widow remarriage, the Hindu superiority in numbers is gone, and the Mohomedans have a larger proportion of married females at those ages, the numbers being 837 and 860 per mille respectively. This is a significant fact for the student of population, as he will find herein an explanation of the relatively greater prolificness of the Mohomedan as compared with the Hindu population. As the Mohomedan population is more homogenous than the Hindu population the proportions by Provinces show no sensible variation except that in localities where Hindu feeling is very strong the Mohomedans have not escaped its influence and their proportions are more or less vitiated, *e.g.*, while for the whole of India the number of Mohomedan married females per 1,000 at the ages 0-5 is only 5, it is 30 for the Mohomedan female population of those ages in the Baroda State, 31 in the Central India Agency, 20 in Bihar and Orissa, and 40 for the district of Darbhanga (the corresponding Hindu figure being 156).

Figures for the Buddhist population.

Among the Buddhist population, which is practically confined to Burma, the proportion of unmarried persons is the highest and that of married the lowest that is found among the other numerically important religions in this country. The proportion of the widowed female population is also the lowest and it is striking that up to the age of 15 while there are 26 and 16 widows per 10,000 of the female population among Hindus and Mohomedans respectively, the figures

for the Buddhist population are blank. At all ages 57 per cent. of the males and 52 per cent. of the females are unmarried. Only 39 and 37 per cent. respectively are married and 4 and 11 per cent. are widowed. These proportions bear resemblance more to those for European countries than to those for the rest of India.

English figures.

Let us now contrast these figures with the corresponding figures for England and Wales. Up to the age of 15 no boy is married in England while in India 6 per cent. of the males of those ages are married. At the age of 20 while the English figure is 2 per 1,000 for males, the Indian figure is 321 or very nearly a third of the male population of that age. At the age of 25 the English and Indian figures stand at 142 and 591 per mille respectively. In the case of the female population up to the age of 15 there are practically no girls married in England, while in India 20 per cent. are married at those ages. At the age of 20 there are only 12 girls in a thousand that are married in England, while in India 80 per cent. are married at those ages and the unmarried either belong to kulin families and cannot find suitable husbands or they are persons suffering from some infirmity or disfigurement, beggars, concubines, religious devotees and mendicants. The stigma attaching to old maids in European society has no meaning in this country. It is between the ages of 25 and 35 that the majority of the females are married in England and Wales, whereas in India the same proportions are recorded as early as 15 and 20.

Fecundity of marriages in England and India.

The student of population is now entitled to ask what this irksome statement and comparison of figures signifies. How does the universality of marriage affect the growth of the population? Population, in spite of all that the Malthusians may have to say, is power and if we get a healthy and vigorous population, even if it be an increasing population, there need be no cause for alarm at the extreme prevalence of married life in this country.

But what are the facts. Let us turn to figures again. The total number of births registered in England and Wales during the year 1911 was 881,138 which when calculated on the total population gives a crude birth-rate of 24·4 per 1,000. The total number of births registered in India during the same year was 9,209,703, which when calculated on the total population gives a crude birth-rate of 38·59 per 1,000. It would seem therefore that the fertility in India is higher than in England. But this is not so. The total number of females of reproductive ages (15-45) in England and Wales at the Census of 1911 was 8,988,745 and if we calculate the births per thousand of such females the figure stands at 98. The total number of females of those ages in India in 1911, was 71,535,861 and the corresponding Indian figure is 128. If, however, we calculate the births on the number of married females of reproductive ages the Indian figure stands at 160 while the English figure is 196.

Burma and India.

The Province of Burma will illustrate our point more forcibly still. In spite of the small crude birth-rate of 34 per thousand of the total population as against the 38 per mille for all India the births (for the Buddhist population) per 1,000 women of reproductive ages 15-45 are 149 as against 128 for all India. The contrast becomes more striking still when the married female population of these ages is taken into account—the figure being as high as 229 for Burma as against 160 for all India.*

Figures for birth by religion are not available in this country, otherwise a similar examination of Hindu, Mohomedan and Parsee figures would have been attempted, but the English

* It seems necessary to invite attention to the fact that the proportions worked out here differ from the official figures inasmuch as estimated figures which are very much higher are taken there, while here the recorded figures are taken. The estimates are based on actuarial calculations and give the birth-rate and the death-rate much higher than those arrived at from the vital statistics. This, however, makes no difference to the argument as the Census reports also draw the same conclusion from those figures.

and the Burmese figures given above would seem to show conclusively what is *a priori* obvious, *viz.*, early cohabitation and premature maternity tend to exhaust the frame and impair the capacity for further child-bearing rather than to add to the number of the population. The most prolific races in India as we shall see in the next chapter, are those which are least addicted to child-marriage, *viz.*, the Animists and the Mohomedans.

Certain remedies.

What is then the remedy ? The Malthusian will say, abstinence from marriage for a great many who have not the means to support a family but are now driven to marriage at an age not demanded by the physiological needs of the human constitution. The Eugenist will say, marriage only for such as are physically and mentally fit for the propagation of the race. But the Malthusian makes much too strong a demand upon human nature and the Eugenist holds out an ideal of collective good which individual selfishness will never accept. As Professor Taussig has put it " Any system of restriction and selection would probably be inconsistent with that striving for freedom of opportunity and for individual development which is the essence of the aspiration for progress. It is difficult to conceive any such system which would not imply the sacrifice of present happiness by countless individuals for the sake of a cold and distant ideal of ultimate racial improvement. Only some very limited applications of the principle in extreme cases seem now within the bounds of possibility. Certain types of criminals and paupers breed only their kind and society has a right and a duty to protect its members from the repeated burden of maintaining and guarding such parasites. Some sorts of disease and taint are inherited and it is merciful alike to would-be parents and possible offspring to put a check on their transmission. Beyond this, there is little prospect under any social system which we can conceive that mankind will

Will Eugenics help ?

deliberately select a portion among its members as alone privileged to perpetuate the race."

Will Malthusianism help?

Malthus' mode of solving the problem of population by restraint on marriage until there is a fair prospect of keeping a family in the habitual style of living has doubtless the merit of looking beyond the limits of the domestic circle and insisting on the responsibility of parenthood by reference to the well-being of the nation. It, however, puts too great a strain on the individual, overlooking the Pauline precept "It is better to marry than to burn." Apart from this an unmarried life is not good physically for a man. From statistics collected in 1909 by the State authorities of New York and in 1910 by the United States Census takers it is established that the death-rate is lower among married than among single men. In the Journal of the American Medical Association we read "the most obvious fact indicated by the figures is that the death-rate for married men is much lower than for single men at each age group except from 20 to 30 and even there it is about the same. From 30 to 40 the death-rate among the married men is slightly under 6, while among single men it is nearly 13. From 40 to 50 there is an even greater difference. The death-rate among married men is 9·5, whereas among single men it is 19·5. From 50 to 60 there is less divergence in the death-rate but there is a difference in favour of the married of nearly 11 deaths per year per thousand. Even from 60 to 70 the death-rate of married men is less than 32, while that of the single men is 51." If we refer to the statistics of mortality among married men who have lost their wives either by death or divorce the value of marriage as a life preserver will be better appreciated. We have from the same Journal "The death-rate among these 'unmarried men' is considerably higher than that of husbands of the same age, and even as a rule it is higher than that of bachelors of the same age. The death-rate for instance of widowers and divorced men between

Marriage as a life preserver.

20 and 30 is nearly double that of single men. From 30 to 40 it is only as 14·1 to 12·9, while from 40 to 50 the mortality of divorced men and widowers is slightly less than that of single men of the same age. If husbands lose their wives they lose much of the chance of longevity which marriage secured them; and in general the younger they are the more they lose."

For this state of things there are good reasons. According to Jacques Bertillon low death-rates occur particularly in occupations in which the workman is under more or less supervision as regards not only health but also habits of life, and in which he is surrounded by influences tending to prevent dissipation and conducive to regular hours and habits of life. He attributes much the same influence to marriage and family life. It is no doubt true that married men lead much more regular lives than unmarried men and are consequently free from the dangers of irregular living. They have a person intimately concerned in their well-being whereas single men have to rely on the good offices of hotel-keepers or domestic servants.*

The remedy.

What then is the position? We have seen that from the demographic point of view child-marriage is bad, that abstinence from marriage is undesirable, that a system of selection on eugenic lines is unattainable. What follows? Marriage must be contracted at a much more advanced age than is customary at present but this is a truism and everybody knows it. By itself it will never solve the problem of population as it failed to do in European countries. And here I may be permitted to let the author of Culture and Anarchy speak for me—"What we want is (not Hebraism but) Hellenism, the letting our consciousness play freely and simply upon the facts before us, and listening to what it tells us of the intelligible law of such things as concerns them. And surely what it tells us is, that a man's children are not really *sent*, any more than the pictures

* It is perhaps not necessary to add that this eulogy of marriage is not for the ill-assorted child-marriages of this country.

on his wall, or the horses in his stable are sent; and that to bring people into the world when we cannot afford to keep them and oneself decently and not too precariously or to bring more of them into the world than one can afford to keep, is by no means an accomplishment of the divine will or a fulfilment of Nature's simplest laws, but is just as wrong, just as contrary to reason and the will of God as for a man to have horses or carriages or pictures, when he cannot afford them or to have more of them than he can afford; and that, in one case as in the other, the larger the scale on which the violation of reason's law is practised, and the longer it is persisted in, the greater must be the confusion and final trouble. And not only to know but habitually to have the knowledge present and to act upon it as one acts upon the knowledge that water wets and fire burns." To a consideration of this we shall proceed in the Chapter that follows.

The Social Reform Movement.

A digression may here be permitted. We hear so much of social reform that it is impossible to neglect the movement and its influence on the problem under discussion. In a statistical study such as this, everything else except the testimony of figures is out of court. Indian census reports do not evince sufficient interest in the subject to examine it in detail of the several castes which have accepted the creed of the reformers, but the Punjab Census Report for 1911 gives tables which show very clearly how little is the impression that social reform has made on its converts as a whole. It is rather fortunate that such an investigation was made in the Punjab for that is a province which is least priest-ridden and quite go-ahead in social reform questions. Says the Census Superintendent Rai Bahadur Pandit Hari Kishan Kaul, C.I.E.: "But in spite of all agitation for stopping early marriage, the Reform Societies do not appear to have had much practical effect so far, even within their own circles, much less upon the masses. Statistics of civil condition relating to the Arya, Brahmo and Dev Dharm sects

were specially collected from the sorting slips. The figures relating to the important castes in each sect will show that the proportion of boys and girls married before the age of 15 is generally larger for the members of each caste belonging to these societies than for the caste as a whole. This may be due in some degree to the return of certain Brahmans as Brahmos and Devi Dharmis as Dev Dharm and the comparative accuracy of the age statistics in the cities and towns to which the members of the Reform Societies are mainly confined may also have magnified their figures compared with those of the total castes but there seems to be little doubt that early marriage is still practised largely among the members of these sects." Verily a case of "faith in social reform but not in the reformers." How little is the progress the country as a whole has made in this direction is shown by the fact that while in 1901 the number of married females per 1,000 of the general population of ages 0-5 was 13 only it rose to 14 in 1911; at the ages 5-10 the 1901 and 1911 proportions stand at 102 and 105 respectively; at 10-15 they are 423 and 430 respectively; at 15-20, 777 and 800, and so on.

III.

NATURAL INCREASE.

We now come to a consideration of the birth and death-rates in this country. The average birth and death-rates per 1,000 living for the decennial period 1902-11 for some of the important countries are given below :—

	Birth-rate.	Death-rate.
Russia (European) ..	48·47 (1896-1905)	31·41 (1896-1905)
India	38·58	34·2
Ceylon	38·12	29·5

	Birth-rate.	Death-rate.
Chili	38·07	30·46
Hungary	36·80	25·68
Germany	32·31	18·39
Japan	32·85	20·86
	(1900-09)	(1900-09)
Scotland .. .	27·99	16·33
England and Wales ..	26·8	15·15
New Zealand	26·79	9·76
Australian Common-wealth	26·52	11·11
Sweden	26·17	14·68
Ireland	23·3	17·28
France	20·25	17·32

Relation between births and deaths.

It will be noticed from the above figures that in countries where the birth-rate is high the death-rate is also high, and where the birth-rate is low the death-rate is also low. Russia, for instance, has the highest birth-rate of any European country; its death-rate is also the highest. Hungary comes next in the birth-rate; so also in its death-rate. In Asiatic countries India has the highest birth-rate; its death-rate is also the highest. Ceylon comes next after India in birth-rate; its death-rate also is correspondingly lower. Japan has the lowest birth-rate of these 3 countries; its death-rate is also the lowest. The figures for New Zealand and Australia are quoted merely by way of contrast so far as the death-rate is concerned, *viz.*, 9·7 and 11·1 respectively against 34·2 in this country; otherwise the stream of healthy and enterprising immigrants to those countries renders the operation of the law of population rather obscure. The figures for France require some explanation. There the birth-rate has been reduced very low; not so, however, the death-rate. This is the result of the extensive use of preventive checks in that country. The births can be controlled and reduced as low as we please; not so, however, the deaths. All

of us have got to die some day and if the reduction of births is carried very far, the birth-rate will some time be overtaken by the death-rate.

Which is the greater evil of the two; a high birth-rate or a high death-rate?

From the figures quoted we can see that our high birth-rate is no matter for congratulation; for from the point of view of population survivals only count, and our death-rate being so high, our increase is much smaller than that of countries like England and Wales, or Scotland or even Ireland, where the birth-rate is so much less. What then is the evil in our midst? Is it the high birth-rate or the high death-rate? We have heard so often of our high death-rate and the means for combating it, but can it be seriously believed that with a birth-rate of 38 per 1,000 of the population living it is possible to go on as we are doing with the death-rate brought down to the level of England or Scotland? Is there room enough in the country for the population to increase so fast as 20 per thousand every year? Some of the deaths that take place are certainly preventible and all honour to those who are engaged in the thankless and onerous task of preventing them, but there seems to me no doubt that we are paying the inevitable penalty of bringing into this world more persons than can be properly cared for, and that therefore if we wish fewer deaths to occur in this country the births must be reduced to the level of the countries where the death-rate is low. It is, therefore, our high birth-rate that is a social danger; the high death-rate, however, regrettable, is merely an incident of our high birth-rate, and if we want to go to the root of the evil, we must look to the causes that give rise to the high birth-rate much more seriously than to the other set of secondary causes that give rise to the high death-rate.

The fertility of Animists and Mohomedans.

The most prolific races in India are the aboriginal tribes which go in Census reports by the name of Animists. They have by far the largest proportion of children of any of the religions of

India. Mr. O'Malley has found that wherever a large aboriginal element is present the growth of the population is very rapid comparatively to other tracts where that element is absent. In the Chhota Nagpur plateau, for instance, this element is strongest and while the rates of increase in the three other divisions of the Province of Bihar and Orissa, *viz.*, North Bihar, South Bihar and Orissa, are 1·9, 0·7, 0·9 per cent. respectively; the Chhota Nagpur figure is as high as 14 per cent. which gives the disproportionately high figure 5·1 per cent. as the rate of increase for the whole of the Province—a rate which is not even approached by any of the other three natural divisions of the Province.

A second factor in the growth of the population is the relatively greater prolificness of the followers of Islam as compared with the Hindus. The Census Report for 1911 shows that the number of Mohomedans rose during the decade 1901-1911 by 6·7 per cent. as compared with only 5 per cent. in the case of Hindus. Since 1881 while the number of Mohomedans in the areas then enumerated rose by 26·4 per cent., the corresponding increase for Hindus was only 15·1 per cent. These figures are striking in view of the fact that there is a very small foreign element among the followers of Islam in this country, and the physical conditions under which they live are similar to those obtaining for Hindus. Various reasons are assigned for this disparity in the rates of increase. Some of these are (1) the comparative absence of early marriage, (2) the greater frequency of widow remarriage, (3) the absence of hypergamy and caste restrictions, and (4) more nutritious dietary, etc. All these causes are discussed at great length in every Census Report and as they are not connected with the law of population they will not be analysed in detail in this essay.

The Spencerian explanation.

For a demographic explanation, we must turn to Herbert Spencer for a short while. He says :—"Organisms multiply in inverse ratio to the dignity and worth of individual life"; or, in other words, in all living beings the powers of reproduction are in

an inverse ratio to those of individual preservation. Thus in the humblest plants and animals there is an enormous number of seeds and eggs ; while in the higher there are but few. In the elephant and man the reproductive powers are the smallest because they have the greatest power of self-preservation. He gives an *a priori* proof of his argument thus : " Every generative product is a deduction from parental life, and to diminish life is to diminish the ability to preserve life. The portion thrown off is organised matter ; vital force has been expended in the organisation of it ; which vital force, had no such portion been made and thrown off, would have been available for the preservation of the parent. Neither of these forces, therefore, can increase except at the expense of the other ; in other words individuation and reproduction are antagonistic."

It will, perhaps, be readily agreed that the dignity and worth of individual life is at its lowest among the aboriginal tribes which accounts for their prolificness. In applying the same formula to Mohomedans as against Hindus one naturally does so with great reluctance and extreme diffidence. The contribution which Mohomedans have made to intellectual progress in this country is, by no means, negligible ; but there is no disparagement of the community as a whole in the statement that intellectually they are not so advanced as the Hindus (the figures of the Educational Department will prove this at once) ; their cerebral development is so much less and as a consequence their fecundity so much greater.

That cerebral development lessens fecundity is corroborated by the results of the Census of Scotland for 1911. " The professional and allied occupations are without exception occupations of low fertility. They include the legal, medical and teaching professions, Officers of the Army and Navy, artists, men with literary and scientific pursuits, etc. The labouring classes, the agricultural and fishing occupations, workers in mines and quarries and transport workers are on the other hand of significantly high fertility." See Dr. Dunlop's paper on the

fertility of marriage in Scotland—a Census study; published in the Journal of the Royal Statistical Society, February 1914.

Fecundity *vs.* Longevity.

Our high birth-rate is, therefore, an indication of the primitive state of our Society and an evidence of civilisation of an unsophisticated type. It is no sign of the exuberance of vital force either. Let us remember Spencer's dictum "Every generative product is a *deduction* from parental life." Fecundity must, therefore, affect longevity. We have seen above that the Animist population is the most fertile of all the others in this country. It will, therefore, be interesting to note that the proportion of persons over 60 is the lowest among them. That fecundity affects longevity is illustrated most forcibly by a reference to the figures for females in the various communities.* The number per 10,000 females of females aged 60 and over among the Hindu, Mohomedan and Animistic communities is 573,497 and 447 respectively. This placed alongside the figures of rate of increase per cent. during the decade 1901-11, *viz.*, 5·04, 6·7 and 19·9 respectively leads irresistibly to the conclusion that it is merciful to female life not to inflict on it too frequently the dangers of child-bearing. Even among the Hindus it is noticed that the higher castes who are less prolific have a higher proportion of old males and a very much larger proportion of old females than the lower castes whose fecundity is so much greater. Pandit Hari Kishan Kaul says—"The higher or affluent castes have a fairly

* See the figures collected from the Census Tables given below :—

Religion.	Rate of increase P. C. during 1901-1911.	Total No. of females in 1911.	No. of females aged 60 and over in 1911.	No. per 10,000 females of females aged 60 and over.	Order in respect of fertility.	Order in respect of longevity.
Hindu ..	5·04	106,647,934	6,114,400	573	3	1
Mohomedan ..	6·7	31,538,319	1,567,640	497	2	2
Animist ..	19·9	5,129,303	229,504	447	1	3

large proportion of old people while the labouring classes engaged in occupations noxious to health have a comparatively smaller number of persons over 40 years old. The castes with fewest old persons, the labouring classes for instance, have the largest proportion of children. On the other hand, the castes with an abundance of old people have a comparatively smaller number of children." See also United Provinces Census Report for 1911, pages 170-171, para. 190; Bengal Census Report for 1911, pages 272-4.

The average expectation of life in this country and in England—Tendency to rise in England and to fall in India.

What holds good on a smaller scale within the various castes of a community or within the various communities of a country holds good also on the much larger scale within the various countries of this world. It was stated in the very beginning of this essay that in countries with a high birth-rate there must be a rapid succession of short lived beings to keep up the numbers, one generation being pushed out of existence before its time to make room for the next. Conversely, in countries with a low birth-rate the expectation of life would be higher. This fact is very clearly demonstrated by the tables * given in the actuarial report

* Table showing comparative expectation of life at decennial ages as deduced from the results of the 1891, 1901 and 1911 Censuses respectively for all-India and England respectively :—

Age.	Males.					Females.				
	India.			England.		India.			England.	
	1891	1901	1911	1901	1911	1891	1901	1911	1901	1911
0	24·59	23·63	22·59	44·07	46·04	25·54	23·96	23·31	47·70	50·02
10	35·46	34·73	33·36	49·65	52·35	34·40	33·86	33·74	51·98	55·02
20	29·24	28·59	27·46	41·04	43·67	29·28	28·64	27·96	43·45	46·36
30	23·66	22·90	22·45	33·06	35·29	24·69	23·82	22·99	35·43	37·84
40	18·75	17·91	18·01	25·65	27·27	20·20	19·12	18·49	27·81	29·65
50	14·28	13·59	13·97	18·89	19·85	15·59	14·50	14·28	20·63	21·87
60	10·12	9·53	10·00	12·90	13·38	10·87	10·02	10·11	14·08	14·81
70	6·48	5·80	6·19	8·02	8·25	6·80	5·98	6·22	8·74	9·13
80	3·65	3·07	3·06	4·40	4·64	3·76	3·12	3·06	4·84	5·10
90	1·69	1·23	1·15	2·32	2·37	1·75	1.64	1·10	2·68	2·55

on the Indian Census figures for 1911. They show that while the average expectation of life of a male in England at birth is 46·04 years, it is 22·59 years in India or only half as much. At the age of 10, the expectation of life is 52·35 years in England, while it is 33·36 years in India. And so on throughout every succeeding age-period. This would not, perhaps, cause surprise as it is generally accepted that the Englishman possesses greater vitality than the Indian. What is surprising, however, is a gradual decline in vitality of the Indian population as testified by the figures for the last 3 censuses. In 1891 the average expectation of life of males at age 0 was 24·59 years; at age 10, 35·46 years; at age 20, 29·24 years. In 1901 the figures dropped to 23·63 at age 0, 34·73 at age 10, and 28·59 at age 20. In 1911 there was a further fall to 22·59 at age 0, 33·36 at age 10 and 27·46 at age 20. At the ages 30, 40, 50, 60 and 70 the figures for 1911 show a slight improvement as compared with those for 1901, but they are still below those for 1891; while at the ages 80 and 90 the decline is as marked as at the earlier ages. The figures for females show the same regrettable tendency, and it is therefore not necessary to analyse them here. This points unmistakably to the conclusion that the coming generation is severely handicapped at start in life and though the prospects of passing through middle age, once that boyhood is passed, might improve, the decline in vitality wears out life sooner and the chances of living to a good old age are considerably smaller than they were, say 30 years ago. Have we ever paused to consider what it means to us in the life of the nation as a whole? It means that the people who alone by weight of experience and wisdom are fitted for the posts of command in the various public activities of the country are snatched away by death; and that the guidance and leadership which belongs to age and mature judgment in the countries of the West falls in India to younger and consequently less trustworthy persons.

Its national significance.

Let it, please, be borne in mind that there is no necessary connection between an advance in civilisation and a decline in longevity as there is between an advance in civilisation and a decline in fertility. The expectation of life in England, for instance, is much larger at every age-period in 1911 than it was in 1901. This is of course *a priori* to be expected. With the progress of medical science and sanitation and better conditions of living for the population as a whole, every stage upwards in civilisation must lessen the chances of death. Conditions in India are abnormal and hence the decline in the expectation of life.

Some features of our high death-rate—Infantile Mortality.

Of the high death-rate in this country there are some features intimately connected with the law of population and which therefore deserve consideration. Infantile mortality is one of these. Out of every 1,000 children born as many as 250 die within the 1st year of life. Below are given figures for infantile mortality for some European countries (for which birth and death-rates have been given previously) which will serve to show that infantile mortality is generally high in those countries in which the birth-rate is high.

Countries.	Deaths of children under 1 year per 1,000 births Average (1902-11).
France	132·4
Germany	186·6
Russia (European) (1895-1904)	260·5
Ceylon	180·2
Japan	159·8
Hungary	207·6
Chili	293·4
New Zealand	64·3
Sweden	84·4
Australian Commonwealth ..	87·5
England and Wales	127·3

Countries.	Deaths of children under 1 year per 1,000 births Average (1902-11).
Scotland	116·1
Ireland	96·1
United Provinces	352
Bombay	320
Burma	332
Bihar and Orissa . ..	304
Punjab	306
Bengal	270
Madras	199

There are two distinct causes of this high mortality. It is no doubt true that the extremely insanitary conditions of child-birth and the appalling ignorance prevalent on the subject swell the figure unnecessarily and to this extent an improvement is possible and may be expected; but what are we going to do by way of saving life when the infant has not the vitality to struggle through that critical period in its existence. The Sanitary Commissioner for Bengal commenting on the figures of infantile mortality for the city of Calcutta during the year 1909 says that "out of something like 2,700 children that die within the first month, more than 1,200 or nearly 50 per cent. come within the heads of premature birth and debility at birth." This he ascribes to early marriage. Everybody marries, fit or unfit, and is a parent at the earliest possible age permitted by Nature. Place such offspring under the best possible sanitary conditions and see if they survive. The dependence of Sociology on Biology is not close enough to enable us to apply the results of the latter to the problems of civilised societies; but what do we find as we descend in the scale of creation. When Nature wants a school of fish she spawns a million. When she wants a few rabbits she produces large families at intervals of a few weeks of which perhaps 10 per cent. survive. To make certain of 100 Kaffirs she produces 200. This is Nature playing with life in her own

merciless manner where there is nobody to thwart her wishes. She plays similar havoc in this country under very much similar circumstances. This seems to me the crux of the problem.

High female mortality at the reproductive ages.

A second feature is the high female mortality at the reproductive ages. Not only is infantile mortality very high but the number of female deaths at the reproductive ages is quite as serious under the operation of the same causes, *viz.*, early marriage, insanitary surroundings at confinement, unskilful midwifery, etc. Figures collected by Mr. Blunt for U. P. (see U. P. Census Report for 1911, p. 194) show that on an average the ratio of female deaths at 15-30 to 1,000 births is never less than 60. As at these ages the Indian wife has not finished her normal span of life the majority of these deaths must be due to child-birth. In Bengal between the ages 5-15 the average number of female deaths per 1,000 male deaths is 749 while between the ages 15-30 it is as high as 1193. Figures for the other provinces are given below and are eloquent of the risks of child-birth to Indian mothers :—

Province.	Average number of female deaths per 1,000 male deaths between 5-15.	Average number of female deaths per 1,000 male deaths between 15-30.
Bihar and Orissa ..	799	951
Bombay	970	1,043
Burma	858	862
C. P. and Berar ...	881	1,100
Madras	923	1,232
Punjab . ..	1,055	1,010
U. P.	897	1,080

We have from the All-India Census Report for 1901, p. 118: "The evil effects of early marriage on female life are clearly shown by a comparison of the proportion of females to males

who are living at the age of 10-15 in each province with the proportion of females of that age who are married. In Burma practically no girls of the age in question are married and this is the part of India where the proportion of females at this age is highest compared with the proportion at all ages. The second place in this respect is shared by Madras and the Punjab where girls of this age are less frequently married than in any other part of India outside Burma, while Bengal where child-marriage is most common stands at the bottom of the list. It may therefore be said that the proportion of females at the ages 10-15 varies inversely with the number who are married at this period of life." This conclusion has been tested by reference to the figures for 1911 and has been found generally correct. Also the Punjab Census Report for 1911 : " It has been shown that the castes which practise early marriage on an extensive scale have generally a smaller proportion of females at the age-period 12-15. Inquiries into a large number of cases show that where the marriage of young people is consummated at an early age, a fairly large percentage of wives dies of phthisis or some other disease of the respiratory organs or from some ovarian complication within 10 years of the consummation of the marriage."

Recapitulation.

The problem that has been unfolded in the preceding pages may not inaptly be summarised at this stage of our argument. As compared with European countries we have—

(*a*) a smaller natural increase in spite of a higher birth-rate ;

(*b*) a smaller fecundity in spite of a larger percentage of married persons ;

(*c*) an infantile mortality twice or thrice or even four times as high ;

(*d*) a much smaller average expectation of life with a steady downward tendency ;

(*e*) a higher death-rate among young mothers; and, lastly,

(*f*) in common with European countries the tendency to increase is greater among the lower classes than among the higher.

What is the remedy ?

The remedy for this distressing state of affairs is fairly obvious—a diminution of the birth-rate. But it is easier said than done. How can one hope to prevent what appears to many as an ordinance of Nature ? Social legislation in this country is beset with difficulty and danger. Even in the advanced countries of the West legislation on Eugenic lines has not proceeded as far as society has a right to expect. To believe in the possibility of concerted action in this land of tradition and sacerdotalism for the prevention of the multiplication of the unfit would argue a want of balance in the proposer and a lack of humour in the convert if such a one could be found. But if this is really necessary the truth must be told and as plainly as possible. The mere weeding of the unfit is, however, not enough. Marriage should not be contracted at the earliest age permitted by Nature. The reader will probably smile at the discovery. For the last 30 years Social Conferences have dinned this into his ears and he is none the wiser for having been told this now. This may be true but he has, perhaps, not been presented with the scientific basis on which the proposition is advocated.

Korosi.

The construction of natality tables is far more complicated than the construction of life tables and requires a scope for observation which is not vouchsafed to private individuals and which Governments, who alone can undert ke the task, are not keen on supplying for the edification of the students of demology. The first attempt, it, is believed, was made by Joseph Korosi whose classical paper based on observations made at Budapest is still the starting-point of all investigations on the subject. Korosi's observations extended over nearly 72,000 married couples in Budapest and refer to the period 1888-1893. His principal results are :—

(1) the summit of legitimate fertility is reached very soon, so that the decline begins, in the case of the male, upwards from 25, and in that of the female, upwards from 18 years,

(2) the legitimate fertility does not remain at the same level for many years together, but it declines immediately after reaching the highest point.

A similar line of investigation was pursued by Dr. Dunlop and his results were published in the form of a paper in the Journal of the Royal Statistical Society for February 1914. Dr. Dunlop arrived at the same conclusions as Korosi, but as his observations relate to Scotland the year of maximum fertility is different. As with Korosi, the younger the wife or the husband the larger the average family, but the effect of delay in reducing the size of the family is much greater in the case of the wife than in the case of the husband; it being estimated that while a delay of 3 years on the part of the wife reduces the average size of the family approximately by one child, it requires a delay of something like 40 years on the part of the husband to effect the same reduction.

This shows how very necessary it is for reducing the birth-rate that girls be married at a much later age than is customary in this country and how futile it is to expect shorter families if the principle of late marriage is, as is done in most reformed families, applied only to boys—the girls having to wait until society is ready for the change, and society in this country is somehow at all times unready for such changes—and, therefore, beyond the acceptance of a resolution at some Social Reform gathering, at considerable risk to the moral constitution and under great pressure from obliging friends, there is no further progress in the matter.

Voluntary restraint in married life.

But an agency more direct in its operation than the one indicated above is necessary and that is the adoption of voluntary restraint in married life. Marriage is on the whole necessary and

wholesome, but the begetting of offspring may be undesirable from more than one point of view. If either of the partners is suffering from some infirmity or congenital taint likely to be transmitted, the State has an interest that deserves to be respected. If the resources of the husband will not permit the expense of rearing children and giving them a decent start in life, common prudence requires that such a risk shall not be run. And, lastly, as is very often the case in this country, if the wife is not capable of undergoing the ordeal of parturition, the dictates of humanity are loud in favour of moderation. The mother's point of view is very often overlooked in such cases and the result is a shattered constitution and a premature grave. The Indian woman of to-day suffers more than her forbears both in the anticipation and in the hour of child-birth ; her nerves and her physique are much softer while her interests are much broader. She thinks more of her children, and the hand of death leaves a more lasting impression on her mind and body than was the case before. Not only this but the upbringing of each child requires greater attention and foresight as civilisation advances. If, then, the little ones come too closely on each other's heels there is risk to the mother physically and mentally, there is an equally great danger to the children in suffering from neglect and low vitality.

Indifference to human life.

Our high death-rate has unfortunately had the effect of diminishing the respect and sanctity with which human life is regarded in civilised societies and here again we have to thank our high birth-rate. The loss of an only child is felt very keenly ; but two or three are not missed in a family of eight or nine children. Again, however strong the natural affection of the parent for the child may be, he is too much of a man of the world to tear his heart over the loss of a life which can be replaced by another equally good and without much worry and anxiety so far as he is concerned. We may say all this without risk of subscribing to the doctrine of Montesquieu that even our natural

affection, as it is called, has a basis in satisfaction obtained or expected and that it is not such an ethereal thing incapable of a rational explanation as is very generally held.

Of the indifference to the value of human life I can give no stronger illustration than the query which used to confront us in our Urdu text-book in the third or fourth standard in our school. We used to be asked in all gravity whom we should try to save : a starving cow or a starving human being if we chanced to meet them alone in a jungle and had the means to save only one of the two. As the teacher was not a Brahmin, let it be said to his credit that he insinuated that a cow however sacred otherwise was not worth the life of a human being. Even now I shudder to think what treatment a pariah would receive at the hands of a Brahmin if he happened to be lying in that critical condition by the side of a dying cow and met the eyes of that worthy Samaritan.

One hears these days of the unpopularity of trained nurses in orthodox families in spite of the heavy loss of life which is caused by the crude methods of the *dais ;* and one wonders why ? It is generally believed that this is one of the tragic instances of the tyranny of custom over people's minds and the mistrust of innovation characteristic of primitive societies. But when we find a similar state of things prevalent in England we may perhaps be inclined to revise this very fashionable belief. Among the working classes in England infantile mortality is rather high (though nothing like ours) and nurses have been provided by the local authorities whose business it is to visit expectant and recent mothers. Of one such nurse a story was told by Mr. Harold Cox during the course of a debate before the Royal Colonial Institute in March 1914. The nurse was telling the mother how to bring the baby up—not to feed it with kippered herrings and the like. As soon as she had gone, the mother turned round and said to a neighbour, " Like her impertinence—telling me how to bring up babies when I have buried ten." We may learn something from this perhaps.

While at this part of the subject one gladly bears evidence to such preventive checks as do prevail in the country. We take the following from the Census Report for 1901 as an explanation of the decline in the birth-rate of Bengal :—

Evidences of the working of the Malthusian Microbe in this country.

" The postponement of the age of marriage cannot wholly account for the diminished rate of reproduction. The deliberate avoidance of child-bearing must also be partly responsible. It has more than once been pointed out by Settlement Officers that the size of a landless labourer's family is smaller than that of a cultivator and there seems to be no reason why this should be the case unless preventive checks of some sort were employed. Mal-nutrition would account for the diminished fecundity of the labouring classes in years of famine or great scarcity, but this by itself would, as a rule, merely postpone conception. A low birth-rate immediately after a famine is usually followed by a period in which the number of births is exceptionally great ; and there is no reason to suppose that in ordinary years the conditions under which the labouring classes live are unfavourable to child-bearing. Moreover, the phenomenon is not confined to the labourer. Mr. Stevenson-Moore finds that amongst cultivators also the size of the family varies with the size of the holding. It is a matter of common belief that among the tea-garden coolies of Assam means are frequently taken to prevent conception, or to procure abortion."

As regards Assam we have the testimony of the Sanitary Commissioner in his report for the year 1913. Commenting on the small rate of growth among the tea-garden coolies, he says : " The economic conditions of life among the labour force are favourable, owing to the amount of care and thought which is devoted by the tea industry towards maintaining the health of the labour force at as high a level as is economically possible, and a higher birth-rate might be expected. An important factor in producing the defective birth-rate appears to be due to

voluntary limitation of births, a practice which is not confined to highly civilised and sophisticated communities."

There are several objections urged against artificial limitation of births and it is perhaps as well to notice them here.

Possible objections to artificial limitation of births.

Firstly, that any such course being unnatural must be harmful.

Secondly, that by restricting competition it must deprive mankind of the many benefits which that competition renders possible for them.

Thirdly, that it is conceivable that from amongst the ashes of ante-natal destruction a Newton or a Faraday might have risen.

Fourthly, that in advocating the enjoyment of married life freed of its burdens and cares, a premium is placed upon the selfish propensities of the better class of citizens in the State and this is both individually and collectively an evil and not a good.

Fifthly, that any such scheme must give an impetus to immoral living.

And, lastly, that there can never be any practical necessity for limitation.

"God never sends mouths but He sends meat" or, to quote its counterpart in an Urdu couplet;

"Asiya kahti hai har subah ba àwaz i buland
Rizk se bharta hai razzāk dahan patthar ke".

To answer all these objections in detail one would have to cover the whole ground of the Social Sciences and such a course is obviously out of place here. By way of reply it seems sufficient to say that civilisation in every phase is a process of subduing Nature and not of obeying it; that it is the part of the wise man to divert the course of Nature into salutary and beneficent channels rather than to leave it alone and suffer the consequences. Again, it is at best uncertain that the loss to humanity by the prevention of births will be much greater than the loss by

the destruction of life which is going on before our eyes through the operation of the principle of Natural Selection. If there is one thing about the law of the survival of the fittest that one cannot approve, it is this that the fittest that survive are not always the persons that humanity itself would select for the benefit of the race as a whole. Opportunity and environment, if favourable, save many unfit persons at present as they destroy many others eminently fit, if unfavourable. This on the worst rendering of the case we may allow will happen, if fewer people are permitted to see the light of day while the weight of probability is entirely on the other side.

That there is danger to the State from the hyper-egoism of the cultured classes and that there is also the probability of a relaxation in the code of sexual morality may be admitted ; but it is very easy to make a nightmare of this and to adopt an attitude of sitting on the fence for fear of making a bad bargain. Morality is after all subjective ; and the external standards to which conformity is enforced are not the same all the world over and have not been the same in any one country for all time. The ultimate test of a moral or a non-moral act is not whether it is or is not in accordance with the views entertained on the subject at the time, but whether it does or does not conduce to the preservation of the race. Our existing social customs are more non-moral in this sense than any system of artificial limitation can possibly be.

Lastly, the absence of any practical necessity for artificial limitation can be consistently held only by those who have shut their eyes to the terrible wastage of life that is going on every day around us. That population must, *at any one time*, be limited to the existing means of subsistence is true, and nothing can be truer. But what preventible misery there is in this grim process of adaptation, the exultant survivors in the struggle for existence do not seem to have a heart for. You have saved your skin and can very well afford to say, ' After me, the deluge '.

IV.

MIGRATION.

We now take up the investigation of the second factor influencing the growth of population, *viz.*, migration. As there is practically no immigration in this country under the operation of economic causes, with which alone we are concerned in this study, the result of this movement is a diminution of numbers or, in other words, a slackening of the pressure of population on the means of subsistence. It is often urged that there is no practical necessity of a diminution of numbers as the population of a congested tract has merely to move to adjacent parts where the land is crying for labour, or, at the worst, to go to the Colonies where they would be able to make a handsome living. But is this really true? Is emigration outside India or migration from one province to another capable of affording the relief that is needed?

For an adequate appreciation of this aspect of the problem we must consider the general problem of the mobility of labour, the scope for development outside the recognised congested areas within the country, and the conditions attending any movement on a considerable scale to the Colonies. Of these three questions the second involves a consideration of the much larger and the more important practical question of the pressure of population on the means of subsistence, which can only be taken up after the factors influencing the growth of population have been dealt with. To avoid overlapping only those features of the general question which affect the possibility of emigration will be considered in this place.

Immobility of the Indian Population.

The stay-at-homeness of the people of this country is the theme of every census report. In 1901 only 9·27 per cent. of the whole population were enumerated outside the district of birth. In

1911 the proportion fell to 8·7 per cent. Even of these two-thirds were born in a contiguous district and the movement, perhaps from one village to another contiguous one but happening to lie in another district, had no connection with the pressure of economic causes. The general immobility of the population is ascribed to two causes: one social and the other economic. The social cause is in the caste system. The operation of this will be readily understood but it does not affect the Mohomedans, the Sikhs, and the Madras pariah. The economic cause is the dependence on one calling, *viz.*, agriculture. As agricultural development is rather slow in this country there is no inducement to the people to leave their ancestral homes.

General and Special Causes.

But this is a very imperfect presentation of an important question. For this stay-at-homeness there are other general and special causes. Man, as Adam Smith has told us, is "of all sorts of luggage the most difficult to be transported." The force of early associations makes him very unhappy in a strange surrounding—not the Indian only but even the advanced Westerner—and as he has not much money with him he finds no amusement that can replace the happy evenings he spent in the midst of his family circle; if illness or misfortune befall him in the home of his adoption, as likely as not, he may find himself a broken man; and what is most important, the change in his social condition is very seldom so marked that he can find a recompense therein for all he has left at home. The conception of the economic man on which the science of economics is based is never realised in practical life; and the reliance which a statesman can place on this conception for a solution of the problem of population is no greater than the reliance which an engineer or a mechanic can place on the conception of the Euclidean point in the construction of arches or locomotives. We have still to meet the man who is not moved by sentiment, who has no domestic attachment, to whom differences of race, religion, speech, environment, or political condition are of no

account and who places all these on the shelf at the remotest semblance of pecuniary advantage. These are the initial difficulties which confront the Indian as they do his more advanced European confrere when the dire necessity of breaking up old ties presents itself to both. By themselves they would not be insuperable; for the Indian though more stay-at-home than the European is not altogether insensible to the influence of economic causes provided he is convinced that the balance of advantage is on the side of making the change. That he does not move is really due to the fact that he is not welcomed as an immigrant anywhere either within or without the country, and that in places where his labour is needed onerous restrictions are placed on his elementary rights as a citizen, so that he recoils from the prospect of working under those conditions. That this is no sweeping generalisation will be seen as we now proceed to examine in detail the possibilities of Indian emigration.

Scope for emigration outside India.

As regards emigration to the white Colonies I can do no more than invite attention to a very thoughtful paper that appeared in the *Times of India* of July 17, 1915, on the subject of Indian emigration to Canada. What the writer says of Canada is equally true of the other white Colonies. Unrestricted emigration to these Colonies is out of the question; the utmost that may be expected is emigration under very definite restrictions; and this of course can give no relief to our congested tracts. The problem is exceedingly complex and raises Imperial issues which can be solved only in a spirit of compromise and not by insistence on the metaphysical right—as Burke would call it—of free movement within the Empire.

The only other important movements outside the country are the movements to Ceylon, the Straits Settlements and the Malay States; the trans-frontier movement to China, Persia, Afghanistan and Nepal being more or less insignificant both in dimensions and in economic importance. The movement to Ceylon is of very long standing and is very useful to the over-

grown population of the Southern Districts of Madras, Mysore, Travancore and Cochin. The chief occupation of the emigrants is on the tea-plantations and their number has increased by 75 per cent. since 1881 from 276,788 to 473,830 in 1911. The Madrasee is generally a willing emigrant and as he is drawn mostly from the depressed classes he has no scruples of caste or social restrictions which would make his stay uncomfortable in Ceylon. There is no colour prejudice, and with the new railway connection between Madras and Ceylon some increase in emigration may be counted upon; but the movement is restricted by the dimensions of the tea industry; and it is doubtful whether any larger relief than it is at present affording to our surplus population can be expected from it in the near future. The emigration to the Straits Settlements and the Malay States is of quite recent growth and is due almost entirely to the demand for labour on the rubber plantations. Here also Madras is the principal source of supply and it is probable that the number of emigrants in this direction will increase as the rubber industry has a great future before it; the menace to its existence from the production of synthetic rubber being rather remote.

Migration within the country.

The main currents of migration within the country are:—(*i*) the movement from Bihar and Orissa and the United Provinces into Bengal; (*ii*) the movement from Bihar and Orissa, Bengal and United Provinces into Assam; and (*iii*) the movement from Madras, Bengal and United Provinces into Burma.

Movement from the United Provinces into Bengal.

The Province of Bengal gains to the extent of a million and a quarter immigrants chiefly from the adjacent provinces of United Provinces and Bihar and Orissa. The causes of the large exodus from the United Provinces and Bihar and Orissa, and the comparative stay-at-homeness of the people of Bengal can be traced to differences in economic conditions. The United Provinces is an old and settled country where almost all the land that is available for cultivation has been taken up; there

is a large body of landless labourers (9·5 per cent. of the total population in 1911) who have no occupation for several months in the year, the holdings of the cultivators are very small, the soil is dry and the rainfall is scanty and capricious, and, with the exception of Cawnpore, there is no industrial town in the Province. The standard of comfort of the people is of the lowest description and their rate of growth is beyond the capabilities of the soil to support. Emigration is, therefore, an economic necessity in spite of the fact that owing to their caste scruples the residents of the United Provinces have to put up with many more inconveniences than the residents of other Provinces. As the Indian Census Report for 1901 says, "The fact seems to be that, having regard to the capacity of the soil, the United Provinces is more densely peopled than any other part of India, and a larger proportion of its inhabitants find it necessary to seek a livelihood beyond its limits."

Movement from Bihar and Orissa into Bengal.

Quite a similar state of things prevails in the Province of Bihar and Orissa. In Bihar the number of landless labourers is over one-fifth of the total population; there are no large local industries to engage them; and agriculture requires comparatively few hands during the greater part of the cold weather. The emigration from the Chhota Nagpur Plateau is interesting in several ways. The population contains a very large aboriginal element and as has been previously noticed is the most fertile of all the elements in the Indian population. Their movement is sometimes ascribed to the fact—rather as a matter for reproach than for felicitation—that the aboriginal has no strong tie to bind him to his home, and that as he is not handicapped by the caste restrictions and social customs of Hinduism, migration is a very easy thing for him. The Bengal Census Report for 1911, however, shows that the truth is just the reverse and in fact that is what we should expect *a priori* A blind love of one's native place would be inconsistent with the spirit of adventure and enterprise characteristic of the

civilised nations of the world and would therefore be met with only among backward and primitive communities. However great the love of home may be, the aboriginal has to leave it under the pressure of economic causes. The infertility of the soil, the primitive methods of cultivation, the thriftlessness of the population, and primarily the large increase in numerical strength—these are the factors which explain the emigration of this primitive race.

To this precarious condition of the population of Bihar and Orissa and the United Provinces Bengal presents a very different picture. The soil is fertile, and the proportion of landless labourers is small. The standard of comfort among the cultivating classes is higher than in other parts of India and the people are averse to manual labour and other degrading occupations. The immigrant from the United Provinces and Bihar and Orissa has therefore the whole range of labour at his disposal. He finds enough occupation as policeman, darwan, leather-worker, etc. Another important demand for labour arises from industrial concerns such as jute, tea, coal-mining, road and railway construction, etc. But this movement is seldom of a permanent character: it only arrests for a while, without destroying, the intensity of the population-problem in the congested areas. The up-country man, especially if he is not of the Sudra class, seldom brings his women and children with him; he retains his old connections and sends remittances as often as he can help. There is hardly any perceptible improvement in his standard of living brought about by the higher wages that he receives; on the other hand he stints himself as much as he can to send money home to pay off the sowkar and redeem the mortgage on the ancestral land, to assist his aged parents and other relations in distress and thus earn a good name in his 'biradari' to which he must return after some time. His thoughts are centered in his home and what his people must be thinking of him; and he cares more for the good will of the people with whom his old age will be spent rather than for the casual remarks of strange

associates who do not and cannot share his deeply cherished hopes and associations.

Immigration into Assam.

The tea gardens of Assam make heavy demands on cooly labour which cannot be met within the Province. 76 per cent. of the cultivable area still awaits the plough, and the indigenous population is much too well off to undergo the discipline and hard-work of cooly life. Labourers have therefore to be imported from a distance and are received chiefly from the Chhota Nagpur Plateau, the Sonthal Parganas and the plains districts of the United Provinces and Bengal. The Province is capable of absorbing a larger number of the population of congested areas in other parts of India and would afford greater relief to such parts were it not for the unpopularity of the system of labour recruitment and the conditions attaching to grants of land for colonisation purposes. The unhealthiness of the country due to the prevalence of Kala Azar and the absence of facilities for communication account in part for the reluctance of outsiders to settle in the country ; but it still remains true that if labour were recruited under the normal conditions of free contract and if, simultaneously, inducements were offered in the shape of grants of land free of revenue assessment for a reasonable period the pressure of population so severely felt in the districts of the United Provinces and Bihar and Orissa would be considerably mitigated. The vested interests of the tea industry, however, stand in the way of an attractive colonisation policy ; for very few people would voluntarily serve as coolies if they were given an opportunity of becoming landed proprietors on easy terms.

Immigration into Burma.

The movement from Madras, Bengal, Bihar and Orissa and the United Provinces to Burma takes place under conditions very much similar to those in Assam. The indigenous population will not do menial work and is willing to pay for those who will do it. Madras, once again, supplies the major portion of the coolie

requirements of this Province. The rice-milling industry and the oil fields of Burma owe their present day importance and size to the coolie drawn from the ranks of the Madras pariah. Indian immigration into Burma is important in more ways than one. In the first place it relieves the pressure in the congested Indian districts. Secondly it gives Burma the labour it requires for its agricultural and industrial development. Thirdly the free and unconventional life of the Burman has a very chastening effect on the caste-ridden and fetish-loving Indian. When Pegu was annexed in 1852, the British Government found Lower Burma quite undeveloped and very sparsely inhabited. They accordingly welcomed Indian settlers on the Burmese soil and gave them grants of land under very favourable conditions. With the annexation of Upper Burma the same problem manifested itself and it was the capital of the Indian money lenders that enabled the Burman of Lower Burma to venture far North and improve his position by becoming a peasant proprietor instead of remaining as a field labourer in his native place. By the close of the nineteenth century speculative purchases of land had become very common, and the rate of agricultural extension was exceedingly rapid. In the meantime, however, the Local Government found an unsatisfactory state of things gradually establishing itself in the Province. The cultivators on the assigned lands instead of being drawn from the congested districts of Bihar and the United Provinces were mostly engaged locally on strictly business principles, with no thought of inducing a settlement of small cultivating owners with occupancy rights, and the grantees degenerated into indolent receivers of rent. The Indian capitalists on the other hand quickly came into possession of the land on which they had advanced moneys and reduced the cultivator to the position of a tenant. Such transfers were viewed with apprehension by the Government of Burma who had formed quite different expectations and accordingly the system of grants and the power of transfer to alien non-agriculturists was consider-

ably modified. The security gone, there was a contraction of credit, a retardation of agricultural development and consequently a block to Indian immigrants in the way of rural pursuits. The Burmans also began to recover their lost position and by now they have occupied nearly all the fertile land that can grow rice at a profit. The Indian immigrant is now engaged mostly in urban occupations and supplies most of the manual labour and hard physical work which the well-to-do Burman peasant proprietor does not care to undertake. The provincial census report of 1911 is very hopeful of the future of the Burmese race which it considers as assured against all hordes of Indian immigrants ; on the other hand it ventures the prophecy that though for several years to come Indian labour may be indispensable for the development of Burman industries, still the time is not far off when the rapid increase of the indigenous population may out-grow the needs of purely agricultural and rural pursuits and the Burmans impelled by economic pressure may take up occupations which they now leave to the Indian immigrant. This tendency, Mr. Morgan Webb is inclined to think, is already manifesting itself and the Burman cultivators prefer employing Burmese labour on their fields to the cheaper Indian labour to which they have been accustomed hitherto. It will therefore be evident that for a solution of the population problem of the congested Indian districts we must look elsewhere than to Burma.

Recapitulation.

It will thus have been observed that emigration has no promise for the inhabitant of this country except in the small province of Assam and that even there it must be preceded by an improvement in the recruitment of labour and the terms on which colonisation is permitted. To be successful on a large scale, emigration must hold out hopes of a distinct improvement in social status and the prospect of earning much higher wages than are obtainable in the mother country. The Indian emigrant, however, remains a coolie all his life and where he is allowed to acquire

property he is not encouraged to do it. It is very doubtful that he will have better luck in the near future ; for we must be prepared as time goes on for a more emphatic assertion of the rights of Nationalities to shape their respective destinies as they please when conditions of life even in undeveloped areas become more trying.

An analogy from public finance.

In proposing remedies that transgress political boundaries one has to take account of several things besides natural justice and elementary rights of citizenship. For Nations must first make sure of a continuous corporate existence before they can afford to be generous or even just. In the domain of public finance a stringency is met in one of two ways, either by severe retrenchment or by fresh taxation. The reduction of expenditure is pure gain while the collection of fresh taxes involves considerable waste and much friction. In the science of demography moral restraint corresponds to retrenchment in public finance while emigration bears resemblance to fresh taxation. And just as a financier would be taken to task for levying new taxes while the existing scale of public charges was capable of adjustment and revision, so also would the student of population be blamed for holding out emigration as a relief for the problem of overpopulation so long as the exercise of restraint in married life was not sufficiently in vogue. Prevention is better than cure, and there is more truth in this old adage than we care to know. As Dr. Chalmers says : " It is not by drawing off the redundancy of the population after it is formed that we can uphold a well-conditioned state of society, but by preventing the formation of that redundancy." Emigration has not worked wonders in any old country and it is vain to expect that it will do so for this country. To quote Dr. Chalmers again—" It is to a moral restraint on the numbers of mankind, and not to a physical enlargement of the means of subsistence that we shall be henceforth beholden for sufficiency and peace in our commonwealth."

V.

PRESSURE OF POPULATION ON THE MEANS OF SUBSISTENCE.

The static view *vs.* the dynamic view of the problem of population.

We have so far been dealing with the physical aspect of the problem of population, *viz.*, with its visible manifestation in births, deaths and migration. The investigation of its economic aspect has a greater practical significance and to this we now turn. It seems necessary to point out that even if divergent views be held, as they are very strongly held, on the question whether population in this country is or is not increasing faster than the means of subsistence, this divergence cannot shake the solidity of the position established in the preceding sections as to the necessity of a diminution of births by the exercise of voluntary restraint in married life. To the average stolid man of the world, however, who takes births and deaths with as much resignation as he takes rain and sunshine, there may appear nothing extraordinary in the wastage of life he sees around him so long as he finds that large numbers of the population do not die of actual starvation and that every person he meets has some sort of occupation to keep him going. This is the static view of a problem which is essentially dynamic in character. Population is not stationary, so also are not the means of subsistence. The problem before us is not whether the means of subsistence at any one time are or are not enough for the population supported, but whether considering the tendency to increase as manifested in the births and setting it against the tendency to development in the available means of subsistence, which of the two shows signs of growing at a faster speed than the other ? The student of population with his theory, *viz.*, population has a tendency to grow in a geometrical progression, while the means of subsistence increase in an arithmetical progression owing to the operation of the Law of Diminishing Return, will answer forthwith that it can

never happen that the means of subsistence will increase faster than the population and that though the tortoise in the fable succeeded in catching the hare the performance is never likely to be repeated in practical life in the race between the tortoise of the means of subsistence and the hare of population.

Arguments for and against over-population.

There are two schools of thought and each sticks passionately to its own view. It is argued that the average income of this country as estimated by Sir David Barbour in Lord Cromer's incumbency as Finance Minister was very much the same as was arrived at when a similar investigation was carried out under Lord Curzon's orders—the official figures being, of course, outdone by the calculation made by Mr. Dadabhai Naoroji—and that as prices had moved considerably upwards, the purchasing power of the average income at the later period was much less, which went to show that the population was growing poorer. This coupled with the alleged decline in the average yield per acre of cultivated land, the indebtedness of the agricultural population and their lack of staying power, and the increasing virulence of the epidemics of malaria, plague and cholera seems to strengthen the belief that the emasculation of the population is proceeding slowly but none the less unmistakably. On the other hand it is alleged that the standard of comfort is rising, that there is still much cultivable land not brought under the plough, that wages are rising faster than prices, that labour is growing scarce and that irrigation can render wastes populous as it has done in various places. It is a pity that in the heat of political controversy truth has suffered, and that it is as difficult to-day as it was in Sir David Barbour's time or even in Lord Curzon's time to form a correct estimate of the proportions of the problem. Statistics of income and wealth are not available and consequently there is no direct means of approaching the question. The evidence is mostly of a negative character and will be presented to the reader for what it is worth.

Sir Herbert Risley's view.

The only serious attempt to show that there is no pressure of population on the means of subsistence was made by Sir Herbert Risley in his Report on the Census for 1901. Nothing has happened since then to render the arguments out of date and it is therefore proposed to examine them in the light of the more recent information afforded by the Census for 1911. These arguments are :—

(*i*) A fifth of the total population of the country is congregated on less than a twentieth of the area, where there are more than 600 persons to the square mile ; a quarter more on a twelfth of the area carrying from 400 to 600 per square mile, and nearly a fifth on an eighth of the area with a density between 200 and 400. Taking these figures together, we find that nearly two-thirds of the total population of India occupy only a quarter of the whole area, while the remaining one-third is scattered over three-quarters of the area which is still very sparsely inhabited and nowhere contains as many as 200 persons to the square mile.

(*ii*) There are considerable tracts even in densely populated areas where there is ample room for expansion. In undeveloped tracts such as Burma and Assam population might be doubled without any apprehension of pressure on the means of subsistence. Moreover irrigation and improved methods of farming can give invaluable assistance in supporting an increased population.

(*iii*) Figures give no idea of the pressure on the means of subsistence, the opportunities for employment and the fertility of the soil must also be considered. This explains why East Bengal is so prosperous in spite of its very high density.

(*iv*) The universal complaint about the insufficiency of the existing labour supply is proof positive, if one were needed, that there is no lack of employment and consequently no more mouths than it is possible to feed.

(*v*) With a few exceptions, the absolute growth of the population is greater in the thickly populated tracts than it is in those

which are more sparsely inhabited, which shows very clearly that even in what we are apt to call "densely" crowded areas the problem has not assumed a practical significance as they are capable of supporting larger numbers than they are generally credited with.

Examination of the above argument in detail. Can the areas of low density support a dense population ?

The figures for 1911 show very nearly the same proportions as for 1901. We now have a quarter of the population on one-twentieth of the area with more than 600 persons to the square mile; two-sevenths of the population on one-eighth of the area with more than 300 persons to the square mile, while there is somewhat less than half the population on a little more than four-fifths of the area. The inference apparently is that in sparsely populated areas there is considerable space for a further growth of population. It is, however, extremely doubtful if such development will ever take place. Calculations of density based on the total area are entirely misleading when there is included in it a large area covered by rivers, hills, rocky wastes, thick jungles and uncultivable barren land. The table given below gives a list of the areas of low density together with the extent of the cultivable and cultivated area which alone can show the pressure of population on the soil :—

Province.	Density per Square mile on total area.	Density on cultivable area.	Density on cultivated area.	P. C. of cultivable to total area.	P. C. of cultivated to cultivable.
Baluchistan	6	..	..	..	..
Kashmir	37	740	1022	5	84
Burma	53	126	515	42	32
Sind	75	590	..	49	28
Rajputana	82	..	..	..	..
Coorg	111	370	792	30	45
Assam	115	151	766	76	24
C. I. Agency..	121	257	482	47	53
C. P. and Berar	122	187	360	65	60

With the exception of Burma and Assam about which something has been said in the chapter on Migration it will be seen that there is no tract in the table given above which can support double or treble its existing numbers. Figures for Rajputana and Baluchistan are not available, but in both these tracts the rainfall is very scanty and there is not much artificial irrigation. The soil is mostly barren and sandy and visitations of famine are quite common. Of Baluchistan it is said that where there is land there is no water, and where there is water there is no land. Rajputana is incapable of supporting in comfort even its existing numbers as is evident from the continuous stream of emigration to other Provinces and countries.

Of the other parts it will be seen from the proportions of col. 2 to col. 3 that while the density on the total area is small, it is quite considerable when taken on the cultivable area and as high as that of the most densely crowded parts of India when taken on the cultivated area. Instances in point are Kashmir Sind and Coorg. This considered with the figures in col. 5 will show that the low density is due solely to the inhospitable character of the soil and that where physical conditions permit the incidence of population on the means of subsistence is by no means light. The only exception seems to be Central Provinces and Berar where we may expect some development in time.

Possibility of expansion in densely populated areas.

The next argument is that even in densely populated tracts there is ample room for expansion. It is very difficult to deal with this in general terms and it is therefore proposed to pass in rapid review the possibilities of growth in each of the old Provinces of Bengal, Bihar and Orissa, Central Provinces, Madras, Bombay and the Punjab. We take up Bengal first.

Bengal.

With a density of 551 persons to the square mile, Bengal is more densely populated than either Great Britain (460) or Germany (311) or France

(189). It is striking that agriculture which supports a smaller number of persons per unit of space than manufacture should support a far denser population in Bengal than manufacture does in the industrial countries of Western Europe. What is more striking is that in European countries it is generally accepted that the limit of population that agriculture can support is 250 persons to the square mile, while in India it is supporting in many places three or four times as dense a population. The explanation of this fact is not to be sought in any inherent superiority of soil or of skill in the cultivator in this country, but in the lowness of the standard of living that carries four persons through on an income which would hardly suffice to keep one soul alive in European countries. As regards Bengal what do the figures show ? We learn that in 1911 agriculture supported directly or indirectly 34,937,017 persons, altogether 75 per cent. of the total population. The total area of this Presidency is 84,092 square miles or 53,818,880 acres. Of this the area net cultivated is 50 per cent. or 26,909,440 acres. The acreage per unit of population supported is therefore a little larger than three-fourth. For possibilities of development we shall have to go more into detail. Of the 30 districts constituting the Presidency, Calcutta has purely an urban population and does not need to be considered except in connection with industrial development. In the districts of Nadia, Jalpaiguri, Darjeeling, Dacca and Noakhali, the limit of population has been reached and the pressure on the soil is very heavy. I will spare the reader lengthy extracts from the reports furnished by District Officers to the Census Superintendent, but those anxious to satisfy their curiosity may refer to pages 94, 100, 101, 108 and 113 of Mr. O'Malley's report for 1911. The Sunderbans area would certainly support a very dense population inasmuch as it extends over 1,700 square miles of flat alluvial (but marshy) country but, in the first place, the expense of cleaning the jungle and rendering it fit for cultivation and human habitation would be enormous ; and secondly the ravages of malaria would render the continued

existence of a heavy population almost impossible. It is owing to malaria that Backergunge and Khulna must remain content with their present population, and further developments are obstructed in Jessore, Rajshahi, Dinajpur, Pabna and Cooch Behar. Chittagong Hill tracts and Hill Tippera consist mostly of land unsuitable for cultivation being overrun by hills and ravines covered with dense jungle. The districts of West Bengal are already thickly populated. In Midnapore and Birbhum 80 per cent. of the area fit for cultivation is under the plough ; in Burdwan the collieries show signs of development and would attract a bigger population were it not for the presence of a virulent type of fever which thins down numbers. Bankura has possibilities, for 90 per cent. of its total area is cultivable of which only 37 per cent. is actually cultivated. It will thus be seen that with the exception of one or two districts, Bengal must wait either for the clearing up of the Sunderbans or the drainage of marshy tracts or for the disappearance of malarial fever before it can furnish room for further considerable expansion. And it will have to wait fairly long before the jungle will be available or malaria disappears.

Bihar and Orissa.

The sister province of Bihar and Orissa is in a very unfavourable position. The people are improvident, they are resourceless, the soil is infertile, there is not much room for canal irrigation, and there are no large industries to draw off the surplus population from agriculture. The Province has an area of 111,829 square miles of which 52 per cent. or 58,151 square miles or 37,216,640 acres is net cultivated. Out of a total population of 38,435,293 persons the number supported by agriculture is 30,083,572 which gives an acreage of 1·2 per unit of the agriculturist population. This might seem to show that the Biharee is much better off than the Bengalee but the state of things is just the reverse. We have to consider not only the extent of the unit holding, but also the quantity and quality of the crop raised thereon. The high price of jute in Bengal and the larger

percentage under rice which is more paying than other food crops makes all the difference. Land in Bengal is more fertile than in Bihar and Orissa ; moreover the extensive cultivation practised by the aboriginal residents of the Chota Nagpur Plateau is of a very primitive type (being little more than a mere scratching of the soil and sowing the seed broadcast) yielding very poor results and thus vitiating statistical comparison. The Province consists of 4 natural divisions : North Bihar, South Bihar Orissa and the Chota Nagpur Plateau. North Bihar is extremely congested and as the Census Superintendent says "almost entirely under cultivation." In Saran the country is so closely cultivated that in some places the natural drainage channels have been brought under tillage. In Muzaffarpur and Darbhanga the pressure on the soil is very great and the agriculturist population lives in a very precarious condition. The constant subdivision of holdings necessitated by the law of equal division of property among male heirs, and the multiplication of numbers due to very early and improvident marriages has increased the pressure on the soil almost to breaking point, and were it not for the fact that they emigrate in large numbers, it would be impossible even to feed so many people under the existing conditions. In Champaran and Purnea, however, there is considerable scope for the extension of cultivation, and were it not for the prevalence of fever in both these districts, the growth of population would be much greater than it actually is. In South Bihar hills and jungles impose the limits on human habitation. The soil is poor, has little or no irrigation and yields precarious crops. Orissa has largely unproductive saline soil along the sea coast and hilly tracts in the interior. The central portion alone is a rich alluvial plain which supports a teeming population. The Chota Nagpur Plateau is inhabited largely by aboriginal tribes whose methods of cultivation are very primitive. There is a large area under forests and most of it is a hilly tract. The people are very poor and visitations of famine are extremely common, and were it not for the Manbhum and Singbhum coal

fields, the iron* and steel works started near the collieries and the tendency to emigrate in large numbers, it would be very difficult for the means of subsistence to keep pace with the extraordinary fecundity characteristic of the aboriginal population.

United Provinces.

The United Provinces has a density of 440 persons to the square mile. It is divided into 8 natural divisions which possess none of the homogenous character of the natural divisions of Bengal. The Himalaya West, the Central India Plateau and the East Satpura are tracts of very low density covered by hills, forests or rocky wastes. They have always been very sparsely populated and will continue so to remain. The Indo-Gangetic plains subdivided into West, Central and East are tracts of very high density in most of which the limit of population has been reached. The soil is very fertile and one-third of the gross cultivated area is irrigated and thus immune from drought. Being the cradles of civilisation from time immemorial these tracts contain a large number of towns whose population is not like the rural population entirely dependent on agriculture. For this reason there is not much cultivable land not under the plough and the population is increasing faster than the means of subsistence.* In almost every district, and there are 30 in all, 80 per cent. of the cultivable land is under cultivation and whatever little is not under the plough is either not quite remunerative or else not really fit for cultivation at all. For as Mr. Blunt says in his Census Report for 1911, page 18, "The figures of cultivable area are somewhat misleading. The cultivable area is the sum of the cultivable waste, old and new fallows, and the cultivated area. But more or less all over the province the cultivable waste includes a large percentage of land which is really barren; either because though it could be cultivated, it could never be cultivated at a profit or because it is required for

* See remarks from the Census Report for 1901 in the Chapter on Migration.

other uses subsidiary to agriculture. It includes for instance threshing floors, well-runs and village paths. It was calculated at the Rae Bareilli Settlement that the amount of so-called cultivable waste which was really cultivable was 3 per cent. of the whole area instead of 18·5 per cent. as returned. This fact very seriously affects the proportions of cultivated to cultivable and cultivable to total." With this qualification in mind we can form an idea of the intensity of the struggle for existence in a province where in 30 out of 48 districts the developmental capabilities of the soil have been exhausted. All these districts show an appreciable decrease of population during the decade 1901-1911, whereas the other divisions (with the exception of East Satpuras which contains only the Mirzapur district and also shows a decrease) all show good increases. No inference can, however, be drawn from this though as we shall see later on a considerable portion of the decrease is attributable to the growing volume of emigrants compelled to leave their homes for fresh fields and pastures new. Mere decreases or increases must be inconclusive and it is surprising to find that Census Reports make much capital of the increasing density of population all over the country to show that there is no pressure on the means of subsistence in India. * When there is no limit except that imposed by the physiological needs of the human constitution (not much greater for a man than for an animal) to the deterioration of the standard of comfort (or discomfort) of an Indian agriculturist it is rather cruel to say that he is prosperous because he feeds more mouths than he did some time ago. So also decreases may be due to other causes than a diminution in the means of subsistence. They may be merely technical, the result of improved methods of enumeration or they may be connected with the state of public health, *e.g.*, the ravages of malaria, cholera, &c. And some portion of the decrease in population is really due to the second of these causes but emi-

* Sir Herbert Risley's argument. Also see All-India Census Report of 1911, page 71.

gration accounts for a sensible proportion. For instance in the Indo-Gangetic Plain East the births are less than the deaths by 83,126 yet the actual decrease is 285,125. Similarly in the Indo-Gangetic Plain Central the death and birth rates were very nearly equal (40·6 and 40·5) and the large decrease of 482,746 is due partly to decrease of immigration. The Indo-Gangetic Plain West has also "lost very greatly from emigration, especially from Aligarh and Agra and its number of immigrants has also gone down" (See United Provinces Census Report for 1911, page 73).

The remaining two divisions, *viz.*, the Sub-Himalaya West and the Sub-Himalaya East are both densely populated. The one contains 437 persons to the square mile and the other 586. In both these tracts there are large areas under forest and the density would be much higher but for their presence. These divisions are healthy and have escaped the severe visitations of plague and malaria. The increases of 1 and 3·5 per cent. respectively shown by them during the decade 1901-1911 are misleading as these contain the districts from which emigration is most active. The Census Superintendent is of opinion that the figures are probably wrong and hence they are not quoted here but it seems that the pressure on the soil being very heavy in Bareilly, Bijnor, Basti, Gonda, and Bahraich they must be sending a large stream of labourers to earn a livelihood outside their territorial limits.

The total area of the Province is 107,267 square miles of which 53 per cent. or 36,384,960 acres is the net cultivated area. The population supported by agriculture is 34,383,677 which gives a unit acreage of 1 very nearly. The figures are typical of the precarious condition of the peasant class and do not need any comment.

Madras.

Madras with a density of 291 to the square mile is more heterogenous in its composition than the United Provinces. The figure for the whole province is a theoretical abstraction and does not convey any idea of the

wide variations in local conditions ranging from 80 per square mile in the Agency Division to 429 per square mile in the South-East. This need not give the impression that the variations are due to the difference of development in each of the various divisions and that as population expands the means of subsistence will expand in quite the same proportion. I will let the Census Superintendent speak for me :—

"Whatever may be the vicissitudes that may attend colonisation and development of a new country, it may be assumed that in Southern India density of population has now to a great extent adjusted itself to local possibility of subsistence and to climatic conditions. Although variations in the decennial rates of increase or decrease suggest possibilities of an ultimate change in the relative positions of districts, or of natural divisions not utterly dissimilar, it is on the whole improbable that, within any appreciably restricted period, the cumulative effect of such changes will be so marked as to render their consideration a matter of present necessity. The suggestion is confirmed by the figures which show that since the enumeration of 1891 the order of density among natural divisions has remained unaltered, while changes in district position have been so slight as to be for practical purposes immaterial." The only natural divisions which are sparsely populated are Agency (80) and Deccan (145). Of the former it is observed that it will ever remain in its present condition, as the soil is not capable of adaptation to the needs of an appreciably greater population, while its seasons of unhealthiness render colonisation unlikely. The Deccan is a bare rugged country, which owes even its present density to the doggedness of the people who with practically no irrigation to support them when the monsoon fails and a rain-fall the lowest throughout the whole Presidency manage to eke out the means of support of a hand-to-mouth existence.

Even as early as 1881* the opinion was expressed that the Presidency had reached the limit of cultivation. The absence

* See Madras Census Report for 1881.

of mineral wealth and especially of coal and iron renders the establishment of large industries of the modern type impossible while the pariah class is practically excluded from all decent occupations. Living is cheap but the people are multiplying faster than the means of subsistence can bear. The untouchables are not handicapped by any caste restrictions and whatever scruples they may have to leave the family circle imperious necessity forces their hands and they migrate in large numbers to Ceylon, the Straits Settlements, Burma and the Colonies outside India. With the exception of Bihar and Orissa which sends the largest number of emigrants outside its borders (1,916,806 in a population of 38,435,293 or nearly 5 per cent.) there is no province in India (though United Provinces follows very close with 1,429,310 emigrants out of a total population of 48,014,080 or 2·2 per cent.) which approaches the Madras Presidency in the number of labourers which it makes available for exploiting the resources of other provinces and countries. The emigrants which numbered 713,203 all told in 1901 were as many as 1,518,179 out of a total population of 41,870,160 in 1911. As long as so many persons are forced by circumstances to seek a livelihood elsewhere it is idle to speak of the latent capabilities of the soil and the practical insignificance of the population problem in the Madras Presidency.

Bombay.

As regards the Bombay Presidency (proper) detailed information is not available but of the four natural divisions into which it is divided, Deccan and Karnatak, though very low in point of density, have more than 80 per cent. of their cultivable land under the plough, while the other two Gujerat and Konkan (though their percentages of cultivation are not so high, being 65 and 55 per cent. respectively of the cultivable area) are the most populous tracts by virtue of the industrial cities included therein. There is a considerable demand for labour in mills and factories which is met not by importation of labour as in Bengal but locally, mostly from the districts of Ratnagiri and Kolaba. From this

we can see that the peasantry in Bombay is not so well off as in Bengal for it is a well-known fact that as long as agriculture continues to pay, the Indian villager does not care to leave his ancestral holding, however small it may be, and betake himself to big cities where he is very miserably lodged, has to work longer hours under enervating conditions and is moreover subject to the dreadful ravages of malaria and plague which work the largest havoc among the poorer classes in the towns.

Punjab.

The Punjab is divided into four natural divisions, the Indo-Gangetic Plain West, the Himalayan, the sub-Himalayan, and the North-West Dry area. Of these, as in the United Provinces, the Himalayan Division is the most sparsely populated (78 persons to the square mile) and for the same reasons. Only 21 per cent. of the total area is fit for cultivation and the rigour of the climate makes it impossible for a densely settled population to find the means of subsistence all throughout the year. It is incapable of development and with the exception of some tea grown in the Kangra Valley, there is no other industry to engage the energies of the local population. Next in point of density comes the North-West Dry Area with a density of 99 persons to the square mile. The rainfall is very scanty, the soil is poor consisting of large stretches of sandy waste in most of which irrigation facilities are absent and hence there is not much room for expansion. Irrigation is transforming this desert into a fertile wheat-producing country, but there is a limit to the extension of the canal irrigation determined by financial exigencies. Population is chiefly congregated in the other two natural divisions, as in the United Provinces, the sub-Himalayan (density 305) and the Indo-Gangetic Plain West (density 286). In both these tracts there is considerable congestion and as much as 78 per cent. (*viz.*, nearly all) of the cultivable land has been taken up for cultivation. The Indo-Gangetic Plain contains many large towns which support a big industrial population; the pressure on the soil is also very heavy, there being many

districts such as Gurgaon, Ferozepore, Faridkot, Maler Kotla where absolutely nothing is left for the new comers to break up and bring under the plough. The districts of Jullunder, Amritsar, Hoshiarpur, Gurdaspur and Sialkot are all more or less overcrowded and were it not for the fact that the Canal Colonies are providing an outlet for the surplus population, considerable apprehension would have been felt from the growth of numbers for some time past. The Triple Canal Project is now complete and though the experience with the existing settlers has not been of the happiest description we may expect some development in the North-West Dry Area and with it a considerable relief to the congested population of the Indo-Gangetic and sub-Himalayan Divisions. Emigration is not a factor of importance in this province and the figures for the outgoing and the incoming population nearly balance. The country is the country of peasant proprietors who are generally much better off than the cultivators in Madras, Bombay and the United Provinces or Bihar and Orissa and their standard of comfort is comparatively higher. The total area of the province is 136,330 square miles, of which 33 per cent. or 45,443 square miles or 29,083,520 acres is net cultivated. This to a population of 14,036,976 persons supported by agriculture gives a share of more than 2 acres per individual which is higher than anywhere else in India, as we have so far seen.

Central Provinces.

In Berar and the two Western Districts of the Nagpur Administrative Division, *viz.*, Wardha and Chanda, there is practically not an acre of good land unoccupied. This contains the cotton producing country where with the development of factories an enorous extension of cultivation has taken place with the result that the people are happy and prosperous. The same congestion is apparent in the district of Hoshangabad, where the Census Superintendent says : " It is doubtful whether the land can under present conditions of cultivation support a larger rural population than that which it at present possesses."

In the other districts probably some development may be expected as is apparent from the large percentage of cultivable land still uncultivated. Much reliance cannot, however, be placed on the figures for cultivation as we have seen already in the case of the United Provinces. It is extremely probable that the figures for the cultivable area are unduly swollen, *e.g.*, in the Hoshangabad district there should be 43 per cent. of cultivable land still uncultivated, while actual observation shows that there is none.

Subsidiary considerations.

We have now reviewed, though in a hurried and imperfect manner, the agricultural possibilities, which practically cover all the economic possibilities for such a vast agricultural population in each of the major provinces of India excluding Burma and Assam. We have now, in following the Census Commissioner through his arguments, to see what opportunities Assam and Burma offer for the relief of the congested tracts of the Indian Empire; how far the probable development of irrigation will render available for the support of population tracts now discarded as uncultivable, and lastly what measure of relief can industrial development be expected to provide both by way of raising the standard of comfort of the people as well as by opening up new avenues of employment which by weakening the dependence on agriculture and its inevitable vicissitudes will prove beneficial in two ways, first in enlarging the mental horizon of a depressed and fatalistic class of people, and secondly in bringing happiness and sufficiency to homes which know them not at present.

Assam.

The problem of colonization in Assam has been discussed already in the Chapter on Migration and there is no need to repeat those statements for the purpose of establishing what must be clear to any thinking mind that as long as Colonisation on more favourable terms is not permitted and until the tea planters are in a position to offer better terms, it is hopeless to expect

large settlements from the congested areas of Bihar and Orissa and the United Province East. The net gain from migration in Assam at the last Census was found to be 802,351, but there is no reason why with 76 per cent. of cultivable land of which only 24 per cent. is net cultivated, this number should not be three times or four times as large now that communications have been improved and the ravages of disease largely mitigated.

Burma.

The obstacles to Indian immigration in Burma arise from 3 different causes :—(i) The reluctance of the Indian to cross the 'kalapani,' (ii) the land policy of the Government of Burma, and (iii) the expansion of the indigenous population.

Were it not for the fact that the journey to Burma has to be done by water which will certainly take his caste (perhaps his life, as he imagines) it is certain that the Indian would be much more in evidence in Burma than he is at present. This is one of the reasons why the casteless pariah of Madras has swamped the country. This must continue as a deterrent factor for a long time to come.

The land policy of the Government of Burma has been considered in the Chapter on Migration and need not be discussed here again. But more powerful than either of these two is the rapid and steady expansion of the Burmese themselves. They have established themselves in agriculture and closed its doors to the Indian, and as they are increasing at a very rapid rate (15 per cent. from 1901 to 1911 and 18 per cent. from 1891 to 1901, while Indian immigration is declining not in actual numbers but in significance, see pp. 77-78 of the Provincial Census Report for 1911) it must happen after some time that they will be forced to relinquish their slothful and ease-loving habits and be obliged to enter into competition with the Indian who now monopolises the urban occupations. Even at present there are signs of such a tendency in operation. We have from the Census Report —" In Upper Burma there are indications that concerted action

is being taken by the Burmese to prevent the Indian coolie from establishing himself in many localities. Contracts are now being accepted and performed by Burmese labour which formerly would have been given as a matter of course to Indian contractors employing Burmese labour. This tendency is in an elementary stage but with steadily increasing economic pressure it may be expected to gain force." With the spread of enlightenment it is not altogether improbable that we may see the manifestation and assertion of a distinctly national spirit and a national self-consciousness which may clamour for closing the doors to the Indian on much the same ground as they are closed against him in the white Colonies in the Empire.

Irrigation.

We have next to consider what part irrigation can play in mitigating the intensity of our population problem. The development of agriculture on a large scale is largely a question of irrigation, for though opinions differ as to the extent of waste land available for cultivation, it is generally admitted* that a greater portion of the area classed as cultivable is such as could not be cultivated with profit under existing conditions. There is not much land available in the old provinces while in those still undeveloped the prospect is not very bright. There are, however, certain tracts which with irrigation could be made to yield crops which would afford some relief to the congested areas in the neighbouring districts. Irrigation in certain districts of the North-West Dry Area in the Punjab has undoubtedly worked wonders but the rate of progress achieved in that area cannot be taken to indicate the future possibilities in irrigation in this country. There are certain very definite limitations on the usefulness and extension of irrigation which well-meaning enthusiasts are apt to ignore. In this connection it is interesting to cite the remarks of the Census Commissioner for 1901.

* See Irrigation Commission Report, page 16, para. 60. Also Decennial Statement of the Moral and Material Progress and Condition of India during 1901-1912, page 223, para. 3.

Dwelling on the outlook for the future, he is led by optimism to the statement. "But what has yet been done (*viz.*, by irrigation) is perhaps only a small instalment of that which the future has in store. There is enough water in the rivers of India, now running useless to the sea to render fit for the plough *many millions* of acres at present barren and uncultivable." These sentences were written in all probability before the Irrigation Commission of 1901-03 had brought out their report. The calculations of the Commission show that out of a total rainfall of 125 billion cubic feet only 51 billion cubic feet is available for surface flow of which only 6·75 billion cubic feet is utilised in irrigation. Or in other words 59 per cent.* of the total rainfall in this country is absorbed in sustaining plant life, in maintaining moisture in the soil, and in replenishing the subsoil water supply, or is lost by evaporation; 6 per cent. is utilised in artificial irrigation; while the balance of 35 per cent. is carried away by the rivers. That is to say 87 per cent. of the total surface flow passes to waste in the sea.

Commenting on these figures the Commission anticipated the remarks of the Census Commissioner quoted above. They go on to say—"By those who have no knowledge or only an incomplete knowledge of local conditions, it may be thought that a large part of the great volume of water, amounting to more than 44 billion cubic feet which now passes uselessly to the sea, might have been utilised, or could be utilised in the near future for an enormous extension of irrigation and the effectual prevention of famine . . . . We are far from considering that irrigation in India has reached its ultimate limit. . . . , but we are convinced that there are many parts of India where the utmost use of every available means of irrigation will fail to afford complete protection against failure of the rainfall." The limitations on the development of irrigation are of manifold character; they arise from the extent and distribution of the rainfall, the conformation of the surface

* Of this nearly 1½ per cent. is utilised in well irrigation.

of the country, the character of the soil and last but not least from the limited financial resources at the disposal of Government.

In places where the rainfall is assured and well-distributed irrigation is not in demand and does not pay, *e.g.*, in Eastern Bengal, Assam and Lower Burma. In places where the rainfall is precarious, storage works are generally required which throw a burden on the State over and above the cost of constructing canals and distributaries. Moreover their construction involves the submergence of large cultivable areas and there is considerable wastage by evaporation and percolation.

The flat surface of the alluvial plains of Northern India is most favourable for the construction of canals compared with the broken and rugged surface of Western and Southern India. For the construction of tanks, however, the position is reversed and for a similar reason the construction of storage works (without which water cannot now be made available in dry areas) is not possible. For wells the flat surface has a decided superiority over hilly tracts and this is one of the reasons why well-irrigation is more common in Northern India than elsewhere. The black cotton soils of the Deccan are generally retentive of moisture and do not stand in need of irrigation ; moreover there is a very large area of barren and uncultivable waste which even with irrigation can never be made to yield crops that will pay. All these difficulties are more or less outside human control but perhaps with a lavish scale of expenditure their intensity could be abated. For the construction of 'productive' works the field is extremely limited and when all the existing schemes have been completed, say within the next fifteen years, we will perhaps have reached a limit in that direction. We have from the report of the Irrigation Commission :—

"The first point that strikes us, in approaching the question of the scope for further extensions of state irrigation works, is the limited field for the construction of new works which are likely to be equally remunerative or even to be at all directly

remunerative. "There is no prospect of new irrigation works, on any considerable scale proving directly remunerative in any of the Provinces in which protective irrigation is most urgently required ; namely, the Deccan districts in Bombay and Madras, the Central Provinces and Bundelkhand. The only Provinces in which there is a considerable field for new irrigation works which are almost certain to be remunerative are the Punjab, Sind and possibly Madras." The financial results on the major works show a substantial profit to the State but only three Provinces (United Provinces, Punjab and Madras) contribute to the total, while the scanty net returns of other Provinces (Bombay, Burma, North-Western Frontier Province) are not even sufficient to meet the losses of the rest (Central Provinces and Bengal).* And when it is borne in mind that there is no hope of new schemes either in the United Provinces or in the Punjab or in Madras proving as remunerative as those already in hand it will be obvious that whatever fresh expenditure will be incurred by the State will be governed by other than commercial considerations. For such protective works the Irrigation Commission recommended a scale of permissible capital cost per acre and also advocated their construction from loan funds, debiting only the excess outlay in maintenance and repairs to the Famine Insurance Grant instead of the whole cost of construction as at present. But these recommendations have not been accepted by the Government of India for fear of adding to the unproductive public debt and thus spoiling the credit of India in the money market. Nor is there any hope that they will be carried out in the near future. The tightness of the money market brought about by the War will last for a good many years to come : with the London market practically closed and the incapacity of the Indian Market to take big quantities, issues of loans will have to be restricted to the smallest figure possible and in such conditions the requirements of pro-

* See the Finance and Revenue Accounts of the Government of India for the year 1911-12, pp. 152-3.

ductive expenditure must naturally take precedence of all such unproductive expenditure however urgently required otherwise. The Commission prepared a programme for 20 years involving a capital expenditure of 44 crores of rupees which would render available for cultivation an additional $6\frac{1}{2}$ million acres. This is about as much as the past history of canal irrigation enables us to expect though of course finality in such matters is not given to human beings. The student of population will be interested to learn that by 1925 if the programme be carried out "the limits to the area which can be protected by State irrigation works at a cost which will not be prohibitive will be within sight." It may be added here without damage to the findings of the Commission that later investigations have shown that the field for the construction of productive works is slightly larger than that sketched out by them while the case with the programme of protective works is just the reverse.

There is no unmixed good in this world and to this universal rule Canal Irrigation is no exception. While affording immunity from famine to the tracts through which the canals pass they cause considerable injury by (1) depriving the riverain lands of the full benefit of river flooding, (2) spreading malarial fever owing to the excessive moisture diffused round about and (3) causing a deterioration of the soil.

The first point does not need to be laboured at length, for when weirs are thrown across rivers the inhabitants of the river valleys whose water supply came from floods and inundations must suffer and so much area must go out of cultivation. In the Punjab it is reported that the damage from this cause has been considerable. That excessive canal irrigation is injurious to the health of the surrounding locality will be easily admitted. We have from the Report of the Committee appointed to enquire into the administration of the Son Canals—"This change (*viz.*, increase in Malarial fever) is attributed partly to the dampness of the subsoil occasioned by irrigation and partly to the obstruction of drainage occasioned by the canal embank-

ments. It is an obvious conclusion to connect increased malaria with increased dampness. The change, moreover, cannot be attributed to any other cause with any show of reason. We think that in the districts irrigated by the Son, the complaints of injury to health are well founded, and that the tracts so irrigated suffer now more severely than other tracts which are not commanded by Canal water." A similar state of things, it is reported, prevails in the Gujranwala, Montgomery and Dera Ghazi Khan districts in the Punjab where the curve of losses from fever follows closely the extent of canal irrigation (See the Punjab Census Report for 1911, pp. 53).

Water supplies only one of the elements of productiveness of the soil but with an assured supply of water in the canal irrigated tracts there is a tendency to believe that it is the only essential factor and consequently the land is sown with as many crops as it can bear. This leads to an exhaustion of the chemical properties of the soil and eventually to a gradually diminishing return. Again, the spread of alkali on the land deposited with the water from the canals proves deleterious to its fertility and as the Punjab Census report says "experience shows that the tendency on the canal irrigated lands is for the outturn to diminish."

It might seem that we have attached much too great an importance to Canal Irrigation leaving out of account the possibilities of well-irrigation, which served an area of 10,408,424 acres in 1912, which can stand a good comparison with the corresponding figure 17,077,043 acres for the canal irrigated area. It is indeed true that the scope for the extension of well-irrigation is much greater than that for the extension of canal irrigation; perhaps the former will continue to develop even after the latter has reached its limit. There are tracts in which the construction of wells would be cheaper than the construction of canals; perhaps in some cases, as in the Bombay Deccan, canal irrigation would be out of the question; but nevertheless there are very definite and positive limitations to any such

extension on a very large scale. They arise chiefly from the amount and quality of the sub-soil supply, the depth at which it is found below the surface, the conditions of soil and subsoil favouring or impeding construction and the consequent expense of construction and raising the water. The nature of the crop raised and the character of the soil must also be mentioned in this connection; for instance rice crops require much more water than an ordinary well can profitably supply; so also poor sandy wastes or hilly tracts can never be made to yield crops that will pay with any amount of well irrigation. In the flat alluvial plains of Northern India the subsoil contains an inexhaustible supply of water and the cost of construction is very small. Accordingly three-fourths of the well-irrigated area is found in these regions. In these tracts the area served by wells could be doubled or quadrupled with advantage. But in Peninsular India the subsoil supply is at a considerable depth and the rocky bed that is generally met with long before the spring is reached raises the cost of construction to an unduly high figure. Accordingly well-irrigation does not play as important a part as it does in the United Provinces and the Punjab. Nor is the future any brighter. The area under well-irrigation has shown no unmistakable tendency to that steady and continuous expansion as is apparent from the figures for the Canal irrigated area. The following figures will demonstrate the truth of the above statement:—

Year.	Area irrigated by wells in acres.
1906-07	10,949,100
1907-08	14,160,443
1908-09	12,495,993
1909-10	11,881,135
1910-11	10,213,753
1911-12	10,408,424

With the future of tank irrigation we need not occupy ourselves; the area irrigated in this manner is confined to the Madras and the Central Provinces, while there is little or no tank irriga-

tion in the alluvial plains of Northern India or the black cotton soil of the Deccan. There is no systematic attempt either by the State or by individuals to develop this form of irrigation and it will therefore be fruitless to consider its potentialities which for our purposes may be taken to be practically nil.

Pressure of population on the soil.

Whether the pressure on the soil is or is not increasing the reader may judge for himself from the following figures. During the year 1901-02 the extent of area actually cropped (omitting double crops and fallows as they are not available *at any given time* for the support of population) was 199,708,422 acres, while the population supported by agriculture was 155,476,788 giving something more than 1·28 of an acre per unit supported. In 1911-12 the area cropped rose to 215,981,603 acres but the agriculturist population rose more than in proportion counting in all 173,695,022 souls which reduced the unit acreage to something less than 1·24.*

*The figures above relate to British territory only, exclusive of British Baluchistan, Aden, Andamans and Nicobars but inclusive of the Shan State which are however, excluded from the agricultural statistics.

The figures are worked out from the Census tables for identical areas for comparing with the figures for 1901 :—

Population supported by Agriculture in British Provinces in 1901		155,577,965
Deduct—Population supported by Agriculture in Andamans and Nicobars		1,494
		155,676,471
Deduct—Population supported by Agriculture in British Baluchistan		199,683
		155,476,788
Aden figures are already excluded from the Bombay tables.		
Population supported by Agriculture in British Provinces in 1911 ..	173,977,793	
Deduct—As above ..	282,771	
	173,695,022	

The Agricultural statistics are taken from (*i*) the statistical Abstract relating to British India from 1902-03 to 1911-12 and (*ii*) Agricultural statistics of India, Vol. I.

The whole of India has not been included as agricultural statistics are not available for all the Native States.

It would not be fair to suppress the fact that there is no unanimity of opinion on this point. Different sets of figures give different results. The Report of the Prices Enquiry Committee confirms the conclusion arrived at above, *viz.*, that the population has increased faster than the area under cultivation. The index numbers are given below :—

——	Average 1890-91 to 1894-95.	Average 1895-96 to 1899-00.	Average 1900-01 to 1904-05.	Average 1905-06 to 1909-10.	1910-11.	1911-12.
Population ..	100	101·6	103·7	105·7	107·8	108·4
Area under cultivation	100	98	103	105	108	106

These figures were not accepted by the Government of India in their Resolution reviewing the report on the ground that the data on which the table was constructed were, with the exception of the population statistics, largely conjectural and uncertain. They prepared a table of their own which contained figures for those tracts only for which relatively accurate returns are procurable, *viz.*, parts of Assam, the United Provinces exclusive of the hill districts, the Central Provinces and Berar, the Punjab, the North Western Frontier Province and the Bombay Presidency, and they arrived at a diametrically opposite conclusion. The table is given below :—

——	Average 1890-91 to 1894-95.	Average 1895-96 to 1899-00.	Average 1900-01 to 1904-05.	Average 1905-06 to 1909-10.	Average 1910-11 to 1911-12.
Population	100	93·4	102·2	105·5	106·9
Area under cultivation ..	100	100·4	101·4	102·7	103·4

They were also of the opinion that as the cultivated area at the close of the period under review (*viz.*, 1890 to 1912) included irrigated land to a considerably greater extent than at the outset the consequent improvement of outturn and the increased certainty of securing it must have more than counterbalanced any slight defect in area as compared with population if indeed any such defect existed.

Industrial occupations of the population.

For a country where 70 per cent. of the population is dependent on agriculture while the percentage supported by industry and commerce taken together is only 19, where the increase under Agriculture continues to be much greater than under Commerce and Industry—not only so, but there is a cry of scarcity of labour in the latter—any solution of the problem of population which takes account by thousands, as Industry inevitably must, will be of no avail. The close and heated atmosphere of factory life, the hard work and discipline under which labourers live in factories and lastly the breaking of domestic ties and the inevitable hardship of living in insanitary surroundings subject to the ravages of plague and malaria which infest Indian cities, all this does not appeal to the Indian villager and as long as his land gives him even a bare subsistence he will not think of becoming a factory labourer where even with a much better wage the net advantage is not very great.

We hear a great deal of the development of industries in these times. In so far as new industries are exploited and established they certainly increase the avenues of employment but the major portion of the development in this country takes the shape of substituting the machine for the hand worker. The ultimate gain to the community may be undoubted, but the direct loss of the means of subsistence to the hand workers ousted in the competition is more undoubted still. Economists have discarded the idea that the introduction of machinery increases wages all round; it is now accepted that the transi-

tional period inflicts considerable hardship and suffering on those whose highly specialised skill has lost its market and who find it extremely difficult to go elsewhere at a comparatively advanced age. This is what is taking place with several indigenous industries in India. The handloom weavers or "Julahas" are now losing their occupation; the decline in their numbers is commented upon in every Census Report. Mr. (now Sir Edward) Gait, in his Census Report for 1911, says:—"As compared with 1901, there has been a decrease of 61 per cent. in the number of persons supported by textile industries. This is due mainly to the almost complete extinction of cotton-spinning by hand. Weaving by hand has also suffered severely from the competition of goods made by machinery both in Europe and in this country. There has been a large increase in the number of cotton mills, but as the output per head in factories is far greater than that from handlooms, the addition of a given number of factory hands involves the displacement of a far larger number of hand workers. Where land is available, the rise in the price of agricultural produce tends to make the weaver like other artisans, take to the plough as his principal means of subsistence." This should give food for reflection to persons desirous of establishing industries (which are generally textile) with the object of drawing off the surplus population from the land. Taken altogether, industry is now supporting a smaller number of people than it used to do in 1901. Similar is the case with trade. The former has thrown off 50,359 persons, and the latter as many as 594,494 who have gone, in all probability, to swell the agriculturist population which has increased by 27,107,909 against an increase in the total population of 20,795,340 souls during the decade 1901-1911. Some figures are quoted here for the various industries in the Punjab, where 20 per cent., the highest in India, of the total population is supported by industry. Cotton ginning which supported 139,301 persons in 1901, supported only 89,743 in 1911, or a decline of 36 per cent. Spinners, sizers and weavers of cotton have

decreased from 959,688 to 883,156 or a decline of 8 per cent. The wool industry, naturally an important one in the trying winter of the Province, supported 32,361 persons in 1901 and only 17,023 or 47 per cent. less in 1911. The silk industry shows a decline of 19 per cent., glass a decline of 60 per cent. The opening of flour mills and rice husking machines has taken away the occupation of rice-pounders and huskers and flour grinders who have fallen in numbers from 173,458 to 113,318 or by about 35 per cent. The cry is everywhere the same, *viz.*, the displacement of hand labour by machinery. The example of the Punjab is typical of what is happening elsewhere, *e.g.*, in the United Provinces, Bengal, Central Provinces, etc. To this it is no argument that the tendency is inevitable or that ultimately the number of persons supported by these very industries will be much greater than it ever could be under the old system. It may be said, for instance, that transport now supports a very much larger population than in the days of bullock-carts and no body will say that the change has not been for the better. All this may be admitted without affecting the conclusion that industry is *at present* supporting smaller numbers which will in all probability decline at the next Census and that instead of relieving the pressure on the soil it is aggravating it. The main cause of this is that industrial development in India is more marked in substituting methods which feed only two hands where four were formerly fed with the same outturn rather than feeding four where only two were required previously. The Indian demand is not capable of much extension, certainly not so much as to absorb the whole of the present population engaged in that industry and living on hand labour. Besides, the mobility of capital and the hopeless immobility of labour are well-known and the profits which chiefly go to the owners of machinery are invested either out of the country or else in concerns which do not increase the demand for that particular occupation.

The argument from the alleged scarcity of labour.

We have had occasion to deal with the increase of population in areas of high density and have tried to show that it is unfair to build an argument on such increases alone irrespective of the development of the means of subsistence in those parts. The only other argument that requires serious consideration is the alleged scarcity of labour, both industrial and agricultural, in various parts of the country. For if it could be proved that this scarcity is real, the pressure of population on the means of subsistence would be insignificant and a growth of numbers instead of giving rise to apprehension in the minds of the well-wishers of this country would be welcomed as indispensable to the development of resources which lie unexploited but for the men to work them.

It behoves us, therefore, to see from what quarters the cry is raised and what justification, if any, there is for such cries.

Let us take agricultural labour first. The percentage of the population supported by agriculture is rising at each Census and there is a more than proportionate increase in the number of agricultural labourers.* This coupled with the fact that the percentage of the population supported by industry was smaller in 1911 than it was in 1901 accompanied by a smaller acreage of land cultivated per unit of population supported by agriculture should make the student of population pause and wonder in all seriousness how such a cry could be widespread.

The tea-industry of Assam is said to be suffering very badly from want of labour which prevents the extension of operations to any considerable extent. We have touched already on the general conditions of immigration into Assam, which we do not propose to repeat here. It is not denied that a much larger

* No. of agricultural labourers.

18,673,206	1891	+ 80 p. c.
33,522,682	1901	+ 23 p. c.
41,246,335	1911	

Some portion of the increase especially at the Census of 1901 may have been due to faulty enumeration, but there is no doubt that the increase in agriculture is real.

population could be supported with comfort in that province but when that is said it does not follow that such a millennium is obstructed by the stupid perversity of the people of this country who won't go to work where they can find it. As the late Sir Henry Cotton said : " This difficulty has been due to the question of wages which have never been paid on an adequate scale. It was officially denounced as inadequate in the sixties and the increase of wages since that date has not been more than 2 pence a day per head. . . . That difficulty we may be sure will never be solved until some portion of the 20 or 30 per cent. dividends which now find their way to the pockets of the shareholders is transferred to the wages account of the concern." Here lies the crux of the problem. That the wages have remained stationary—they do not amount to more than Rs. 6 per month for men after 3 years of service, Rs. 5 for women and Rs. 3 for children—while prices have risen* cannot be disputed. Moreover the tea-garden coolie whatever his wages must feel the misery of his situation in contrast to the easy life of an ordinary cultivator in Assam. It is said in his favour that his wages is not all that he gets, he is 'housed, medically treated, provided with dhan khets, allowed to keep cattle at the expense of the garden, etc.' This may be all true and perhaps the same argument was used by the supporters of the truck system. The measure of a gift is not the sacrifice imposed on the giver, but the benefit conferred on the receiver. The tea planters may have to spend a considerable sum in providing these perquisites, but they are not worth all that to the coolie who would be happier if their cash value was transferred to him in an increase of wages. Moreover many people might begin to doubt whether the paternal interest thus evinced is really any deeper in significance or any more generous in motive than the care bestowed on the horse or any other instrument of production. It is true, indeed, that the expenses of recruit-

* See " Prices and Wages, in India, " 1913, pp. 14-15, for the rise in the price of common rice which is the staple food of the people of Assam.

For wages, see p. 217.

ment are very heavy, but they do not go into the pockets of the coolie and it is idle to tell him that he is being paid low, because he has been brought at great cost to his master. The very fact that a recruiting agency has to be employed and penal exactments have to be enforced, while there are thousands of labourers with no occupation in the adjacent districts of Bihar and Orissa is proof enough that the net advantages offered by the tea industry are not sufficiently high to attract labour under the normal operation of the law of demand and supply. If this were so people from Bihar and the eastern districts of the United Provinces would certainly not cross the 'kalapani' and risk the chance of a solitary life in Burma and the Colonies when good wages and a congenial atmosphere was available so close at hand.

From Bombay, Punjab, Central Provinces, Madras and Bengal comes the complaint that cultivators cannot find labourers to reap the harvest and to assist in other agricultural operations. The Official Reports echo this cry and seem to take the side of the cultivator in the helpless position in which he is said to have been placed by the labourers who can now dictate their own terms. This may be true but still it is only one side of the shield—something like the much dreaded "servant problem" before us. If we are unwilling to recognise that the cost of living has risen appreciably during the last 10 years and that consequently what was a living wage in 1905 is not so now we should not in fairness expect to be served on the old conditions. Most of us are in receipt of fixed incomes and expect to pay our domestic servants in the same proportion. But while in our case the increased cost of living makes us forego certain conveniences and luxuries our servants cannot keep body and soul alive. Secondly, we in India make demands upon a particular class of people for a particular service to be performed for us.* This was possible under the old order of things when

* For instance each sub-caste or even sub-section thereof must have its own priest, its own cook, a particular caste for bringing water and cleaning the utensils, etc.

occupations were mainly traditional and consequently there was no fear of a disturbance of the market. There was a given demand and to meet it there was a given supply. But under the liberalising influence of modern conditions and the spread of education downwards, the rigid limits to the horizon of the individual prescribed by caste or tradition have been set at naught and every person tries to find out the best market for disposing of his goods, personal or material. The employers or the buyers of these goods on the contrary have not been quick enough to adjust themselves to the changing conditions and still look to the same sources of supply for meeting their demand. The uneven distribution has affected some of them prejudicially and as they have to pay more for attracting the small number left in that group, they raise an alarm of the scarcity of labour, the growing acuteness of the servant problem, etc. In agriculture it is much the same. The Collector of Thana struck the true note when he said in this connection that " the antiquated system of bondage for a term of years is breaking down and the land-owners are slow to recognise the fact that they must revise their methods and give a fair day's wage for a fair day's work. Service bonds are in the present day frequently treated as so much waste paper by the ignorant Warli or Thakur, when the temptation of a daily wage is dangled before his eyes by the forest contractor; sometimes, the bulk of the labouring population of a village is enticed away in this way and when the harvest season comes round, the labour is not forthcoming to reap the crops at the proper moment and much loss is caused."*

The wage statistics of agricultural labourers in this country suffer from two defects, (i) they make no allowance for the fact that employment is not continuous throughout the year and consequently the wages a labourer receives during the busy season do not represent his real remuneration throughout the year and (ii) payments in kind are generally allowed, though cash

* See the Bombay Land Revenue Administration Report for 1911-12, Part II, page 19.

payments are coming more and more into favour. However, such as they are, they are good enough for comparative purposes and as the two defects have an opposite effect we may suppose them to cancel each other. The table given below* is for 23 selected districts from all over India and will clearly show the true proportions of the problem. With the exception of one or two places where wages have kept pace with or out-distanced prices they are as a rule miserably in the rear and the wonder is that labourers can still find it worth their while to work under such disadvantageous conditions.

It is a well known phenomenon in all European countries that prices rise more quickly than wages and whatever rise there is in wages is never exactly proportionate to the rise in prices.

District.	Year for which Index Nos. are given.	Index No. for wages of an able-bodied agricultural labourer.	Index No. for prices.			
			Rice.	Wheat.	Bajra.	Gram.
Rangoon ..	1909	100	122	..	..	..
Toungoo ..	1910	117	230	..	..	..
Rangpur ..	1910	218	213	190	..	..
Backergunj ..	1910	147	246	..	..	..
Calcutta ..	1907	183	185	126	..	..
Patna ..	1907	161	205	150	..	..
Meerut ..	1906	100	..	155	196	173
Delhi ..	1909	160	..	203	157	187
Cawnpore ..	1906	153	..	140	145	156
Fyzabad ..	1906	73	..	132	153	141
Amritsar ..	1909	150	..	235	213	200
Rawalpindi ..	1909	182	..	188	167	194
Karachi ..	1912	116	..	171	250	122
Belgaum ..	1912	83	..	155	175	..
Ahmednagar	1912	163	..	193	265	..
Nagpur ..	1908	160	210	265	..	222
Raipur ..	1908	167	424	509	..	389
Bombay ..	1912	167	..	170	169	..
Ahmedabad	1912	131	..	142	190	..
Jubbulpore ..	1908	125	..	249	..	256
Bellary ..	1907	119	180	..	..	..
Madras ..	1907	..	213	..	..	..
Salem ..	1907	140	177	..	208	..

* Index No. for 1873 for both wages and prices being taken as 100. The figures have not been given for more years than one for the sake of simplicity, the latest are given and they are typical of the general tendency.

The measure of the disproportion is the measure of the acuteness of the labour problem and wherever the labouring classes have been able to make their voices heard the difference is gradually diminishing. Contrast, for instance, the small differences between the index-numbers of the wages of agricultural labourers and of the general level of retail prices in England and Wales with similar figures for the wages and prices in India.

Year	Farm labourer's wages in England and Wales.	General level of retail prices (weighted Index No.)
1900	100	100
1901	100·7	101·9
1902	101·1	101·6
1903	101·2	103·2
1904	101·4	104·3
1905	101·7	103·7
1906	102	103·2
1907	102	105·8
1908	102·4	108·4
1909	102·6	108·2
1910	103·1	109·9
1911	103·2	109·3

I should again add that this conclusion is not supported by the Tables prepared by the Prices Enquiry Committee. They arrived at just the opposite conclusion, *viz.*, wages have risen faster than prices all round. Their index numbers are given below :—

Year.	General average wages in all India.	General average rupee prices.
1900	119	122
1901	122	116
1902	124	111
1903	127	107
1904	130	106
1905	135	116
1906	139	129
1907	143	133
1908	143	143
1909	152	133
1910	155	132
1911	163	134
1912	166	141

[*N.B.*—The index number for wages for 1892 is taken as 100; the corresponding year for prices being 1894.]

I have no reason to doubt the accuracy of these figures but it seems peculiar that the Indian wage-earner unsupported by trade unions, with his unrivalled ignorance of the conditions of the labour market, with little or no capital to go unemployed rather than close with a bad bargain, with no advantage of even a diminution of numbers such as the Black Death produced in England when the phenomenon of wages rising faster than prices was noticed for the first time, and with his notorious fondness for the ancestral home should have succeeded in his fight with the employer while the wage-earner of the West with all the advantages on his side is still carrying on the struggle and is no nearer victory than ever before.

So much for the alleged scarcity of agricultural labour in India. When, however, we come to the supply of industrial labour, we are dealing with a very complicated problem in which various elements besides wages are involved. The wages question even here is an important factor in the problem as is apparent from the figures given in the ' Prices and Wages in India.' Wages have risen but not to the same extent as prices ; and secondly the standard of skill required has risen appreciably in recent times, so that it is not right to compare the higher remuneration of these days with the slightly lower one of the eighties and the nineties. In the case of industrial labour, however, there is this to be said that the employers cannot pay the proportionately higher wage in view of the competition with Western countries (unless, of course, as is bound to happen, greater sufficiency leads to greater efficiency, though not quite at once*) whose working is more economical as the result of long training and experience. Agricultural employers cannot plead this in their favour, for the profits resulting from high prices are not threatened by foreign competition to the same

* " Though employers still complain of the indolence and inefficiency of the Indian coolie, yet those most experienced in the management of local labour are of opinion that its efficiency has increased ; the higher rates have made the coolie physically stronger and more self-respecting, and his pay masters more exacting." See the Decennial Moral and Material Progress Report, 1913, pages 401-402.

extent and they can very well afford to raise wages when they are getting more on their output.

Large demands are made on labour by Government departments for the construction of railways, irrigation works and public buildings. Such employment is more or less of a temporary character, is generally available in places not densely populated and may frequently lie in localities where either there is work enough for everybody living or even if there are some persons available they are not so numerous as to meet the major portion of the demand. Apart from this some sort of skilled labour is generally required which the resourceless and untrained villager cannot furnish. It could only be by mere accident that all the favourable conditions would gather together when a big railway or irrigation project was in hand, *viz.*, an overcrowded labour market with the requisite degree of skill in the vicinity of the work. Allegations of scarcity of labour in such cases are not to be construed into indications of lightness of the incidence of population on the means of subsistence in the country at large.

The mills and factories established in large towns present a different problem. They offer constancy of employment, ascertained hours of work and wages and an atmosphere whose educative value cannot be over-rated. But the general conditions of life in a factory do not suit the Indian villager fresh from his fields and though he gets more than an agricultural labourer he has to spend more, first on account of the increased cost of living in towns, secondly on recreation and refreshments which compensate to some slight extent for the hard work he has put through during the day and which take the place of the good cheer his comrades and relations at home used to bring him, and thirdly on account of the double establishment he has to keep during his sojourn from home. If there is one thing more than another that has impressed itself on the Census returns it is the break-up of large families as evidenced by the gradually

decreasing number of persons inhabiting a house at each Census from 1881 to 1911.

	Average No. of persons per house.			
	1881.	1891.	1901.	1911.
India	5·8	5·4	5·2	4·9

The figures above are typical of all the Provinces.

In itself a consequence of the ever-increasing pressure of population it tends to aggravate its effect by compelling the individual to spend two rupees where he formerly used to spend only one. The labourer when he leaves his home to seek a livelihood elsewhere seldom takes his whole family with him. As a rule he ventures out alone and has to bear the expense of supporting his family perhaps several hundred miles away from himself. So that, though his money wages are higher, his real remuneration is practically the same. Again, he is badly housed in towns, is subject to the ravages of disease unheard of in his native village, and suffers from pangs of isolation amid people with different customs, different language and different ways of living. The uppermost thought in his mind is his native place and as soon as he has accumulated enough to pay his passage there and back, he leaves his work to start afresh in life with all its concomitant drawbacks. All these evils are ingrained in the very constitution of the Indian peasant; they may be overcome slowly but so long as they exist they are strong enough to scare away large numbers from earning the livelihood which they cannot find in their native place, being too numerous for the productive capabilities of the soil. There are doubtless a few places where the available supply of labour has been exhausted; the localisation of industries at certain important centres continues to make demands on the slender resources of these places which tends to magnify the shortage, while at some distance away there is a large surplus population eking somehow a precarious existence from day to day. Says Mr. Blunt in his Census Report of the United Provinces for 1911:

" The concentration of industrial effort is not an advantageous phenomenon ; indeed from some points of view it is disquieting. In a stay-at-home population such as that of the United Provinces its effect is that all available sources of labour are not used ; the labourer will go a certain distance from his home and no further. Were factories and mills built in other centres they would ease the competition of the labour market by tapping fresh sources of supply. . . . Industry and labour are in short both immobile ; both stay at home and do not meet, simply because neither will go more than a certain distance to meet the other."

This process of concentration is perhaps inevitable and it is exceedingly doubtful whether capitalists will ever risk enterprises in places where the only economy that they could effect would be in their wages-bill. Students of economics are well acquainted with the reasons which lead to this localisation and the numerous advantages derived therefrom, and hence there is no necessity of defending a tendency which is bound up with the existence of production by machinery on a large scale.

In all the suggestions made for meeting this alleged shortage in the labour supply, *viz.*, the formation of a Labour Bureau, (*vide* the Census Report for 1901) the stoppage of emigration to countries outside India, etc., there runs a note of helplessness and scepticism in the operation of economic laws which cannot be justified by reference to the Census figures for 1911. Labour must be scarce indeed when it does not get a fair day's wage for a fair day's work and when the employers are unwilling to recognise that the old days of bondage are gone never to return and that in order to get labourers they must make it worth their while to stay and treat them with greater respect and consideration than they have been used to do in the past. The difficulty is as much moral as it is economic. If Sir Henry Cotton is not quite correct in saying that the supply of labour *always* exceeds the demand, Mr. Molony is certainly right in the statement

" that the Indian employer of agricultural labour as in the case of other labour mentioned by* Mr. Chatterton has not yet recognised that to keep his labourer, he must pay him properly, and treat him properly."

Here lies the problem in a nutshell.

VI.

RETROSPECT.

The whole of the ground of the problem under consideration having been covered, a retrospect may here be permitted. What is the problem before us and how are we going to solve it ?

(i) It will have been noticed that marriage is far more common among us than it is among European nations; *primâ facie* the number of children per marriage in this country should be higher than in countries where marriage takes place at an advanced age. But as a matter of fact this is not so. The figures for Burma also point to the same conclusion.

(ii) That our crude birth-rate is high as compared with European countries but as our death-rate is much higher our natural increase is very small.

(iii) That the increase of population is going on at the wrong end of society, *viz.*, among the aboriginal tribes and the lower castes.

(iv) That these sections of the population pay for their fecundity by leading shorter lives;

(v) That of the large percentage of deaths among infants,

* While commenting on the alleged scarcity of labour in Southern India, Mr. Chatterton says : "It is doubtful, however, if there is any real scarcity of labour as the cry mainly comes from those who refuse to recognise that a permanent rise in the price of food-grains by not less than 50 per cent. necessitates at least a corresponding rise in the wages of the labouring classes."

See the Madras Census Report for 1911, Ch. XII, pp. 216 217.

an appreciable proportion is the result of debilitated constitutions and early marriage.

(vi) That female mortality at the reproductive ages is very high compared with the general death-rate and that the risks to the mother from child-birth in this country are very great.

(vii) That the average expectation of life is much shorter than in England and that it betrays an unfortunate tendency to fall.

(viii) That in spite of economic advantages labour is proverbially immobile everywhere. Moreover the Indian labourer suffers more in mind and body by moving from his ancestral home than the labourer in European countries.

(ix) That outside the country there is no prospect of absorption of large numbers of the population of congested areas.

(x) That within the country there are no places capable of development under existing conditions with the exception of Assam and Burma.

(xi) That in Assam and Burma local conditions are not favourable to the growth of emigration from other parts of India.

(xii) That though there are sparsely populated areas they are not so because they are awaiting development but because the character of the soil is inhospitable and there is no further room for the development of cultivation.

(xiii) That in all the old Provinces the pressure of population on cultivation is fairly intense.

(xiv) That the acreage per unit of the agriculturist population hardly exceeds an acre and a quarter and shows a tendency to fall.

(xv) That a development of the means of subsistence in the circumstances of the country can only mean a development of irrigation, but irrigation has no very bright future before it.

(xvi) That the agriculturist population is increasing at the expense of the industrial and trading populations; and that the decline in the latter is attributable to the displacement of the hand-worker by the machine.

(xvii) That the problem of the scarcity of labour is so beset with outside complications that it cannot be used as an argument against over-population.

This is a long list indeed and in saying that it can be cut short by the simple formula of moral restraint one runs the risk of being placed in that uncomplimentary category of narrow and untrained minds whose well-known vice it is, as the biographer of Gladstone says, to insist on ascribing complex results to single causes. The whole argument in the preceding pages, however, points that way and the conclusion is irresistible. We can no longer afford to shut our eyes to the social canker in our midst. In the land of the bullock-cart the motor car has come to stay. The competition is now with the more advanced races of the West and we cannot tell them what Diogenes said to Alexander "Stand out of my sun-shine." After the close of this gigantic World-War theories of population will perhaps be revised and a reversion in favour of early marriage and larger families may be counted upon. But in the first place that will be no solution to our own population problem, and secondly this reaction will be only for a time. Population has shown an unmistakeable tendency to grow quickly after a long war; there is every reason to believe that this war will be no exception to the general rule. The law of population may be arrested for a time in its operation like any other law of Nature but there is no way of escaping it. As Sir James Stewart has said "The generative faculty resembles a spring loaded with a weight, which always exerts itself in proportion to the diminution of resistence. When food has remained for some time without augmentation or diminution, generation will carry numbers as high as possible; if then food comes to be diminished the spring is overpowered; the force of it becomes less than nothing; inhabitants will diminish at least in proportion to the overcharge; If, on the other hand, food be increased the spring which stood at zero will begin to exert itself in proportion as the resistence diminishes; people will begin to be better fed; they will multiply

and in proportion as they increase in numbers the food will become scarce again."

European nations recognise the actuality of this principle; they voluntarily accept it and keep the spring fairly loaded. Would that we also followed their example and instead of letting the spring go off and the hand of death limit the population to the means of subsistence, kept it under control as circumstances required and cultivated thereby the habit of cutting our coat according to the cloth as much in this matter of progeny as in every other concern of life.

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